Robinson+Cole

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Also admitted in Massachusetts

November 11, 2015

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Facility Modification**
11 Francis J. Clarke Circle, Bethel, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) wireless telecommunications antennas at the 140-foot level of the existing 155-foot tower at 11 Francis J. Clarke Circle in Bethel, Connecticut (the "Property"). The tower is owned by SBA Communications Corporation ("SBA"). The Council approved Cellco's use of the existing tower in 2005. Cellco now intends to modify its facility by replacing six (6) of its existing antennas with three (3) model SBNHH-1D65B, 700/2100 MHz antennas and three (3) model SBNHH-1D65B, 1900 MHz antennas, all at the same 140-foot level on the tower. Cellco also intends to install nine (9) remote radio heads ("RRHs") behind its antennas and two (2) HYBRIFLEX™ fiber optic antenna cables. Included in Attachment 1 are specifications for Cellco's replacement antennas, RRHs and HYBRIFLEX™ cables.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Matthew Knickerbocker, First Selectman of the Town of Bethel. A copy of this letter is also being sent to Stergue Costa, the Property owner and SBA, the tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. The replacement antennas and RRHs will be located at the 140-foot level on the 155-foot tower.

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative General Power Density table for Cellco's modified facility is included behind Attachment 2.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The tower and its foundation can support Cellco's proposed modifications. (*See* Structural Analysis Report included in Attachment 3).

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Matthew Knickerbocker, Bethel First Selectman
Stergue Costa
SBA
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

SBNHH-1D65B

Andrew® Tri-band Antenna, 698–896 and 2x 1695–2360 MHz, 65° horizontal beamwidth, internal RET. Both high bands share the same electrical tilt.

- Interleaved dipole technology providing for attractive, low wind load mechanical package

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	14.9	14.7	17.7	18.2	18.6	18.6
Beamwidth, Horizontal, degrees	68	66	69	66	63	58
Beamwidth, Vertical, degrees	12.1	10.7	5.6	5.2	5.0	4.5
Beam Tilt, degrees	0–14	0–14	0–7	0–7	0–7	0–7
USLS (First Lobe), dB	14	13	15	15	15	13
Front-to-Back Ratio at 180°, dB	27	29	28	28	28	27
CPR at Boresight, dB	20	23	20	20	17	21
CPR at Sector, dB	14	10	12	10	9	1
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.5	14.3	17.4	17.9	18.2	18.3
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.8	±0.4	±0.3	±0.5	±0.3
Gain by Beam Tilt, average, dBi	0 ° | 14.6	0 ° | 14.5	0 ° | 17.4	0 ° | 17.8	0 ° | 18.1	0 ° | 18.2
	7 ° | 14.6	7 ° | 14.4	3 ° | 17.5	3 ° | 17.9	3 ° | 18.3	3 ° | 18.4
	14 ° | 14.2	14 ° | 13.6	7 ° | 17.4	7 ° | 17.9	7 ° | 18.2	7 ° | 18.4
Beamwidth, Horizontal Tolerance, degrees	±2.2	±3.4	±2	±4.6	±5.7	±4.3
Beamwidth, Vertical Tolerance, degrees	±0.8	±1	±0.3	±0.2	±0.3	±0.2
USLS, beampeak to 20° above beampeak, dB	16	14	16	16	16	15
Front-to-Back Total Power at 180° ± 30°, dB	25	26	27	26	26	26
CPR at Boresight, dB	22	23	21	20	20	22
CPR at Sector, dB	13	11	16	12	11	4

* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs.

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol® multiband with internal RET
Band	Multiband
Brand	DualPol® | Teletilt®
Operating Frequency Band	1695 – 2360 MHz | 698 – 896 MHz
Performance Note	Outdoor usage

Product Specifications

SBNHH-1D65B

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	6
Wind Loading, maximum	617.7 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Depth	180.0 mm | 7.1 in
Length	1851.0 mm | 72.9 in
Width	301.0 mm | 11.9 in
Net Weight	18.4 kg | 40.6 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Power Consumption, idle state, maximum	2.0 W
Power Consumption, normal conditions, maximum	13.0 W
Protocol	3GPP/AISG 2.0 (Multi-RET)
RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	1 female | 1 male
RET System	Teletilt®

Packed Dimensions

Depth	299.0 mm | 11.8 in
Length	1970.0 mm | 77.6 in
Width	409.0 mm | 16.1 in
Shipping Weight	31.0 kg | 68.3 lb

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system

Included Products

Product Specifications

SBNHH-1D65B

BSAMNT-1 — Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

ALCATEL-LUCENT B13 RRH4X30-4R

Alcatel-Lucent B13 Remote Radio Head 4x30-4R is the newest addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering.

Supporting 2Tx/4Tx MIMO and 4-way Rx diversity, Alcatel-Lucent B13 RRH4x30-4R allows operators to have a compact radio solution to deploy LTE in the 700U band (700 MHz, 3GPP band 13), providing them with the means to achieve high capacity, high quality and high coverage with minimum site requirements.

The Alcatel-Lucent B13 RRH4x30-4R product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x60 W or 4x30 W RF output power. It supports also 4-way Rx diversity and up to 10MHz instantaneous bandwidth.

The Alcatel-Lucent B13 RRH4x30-4R is a near zero-footprint solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

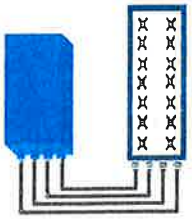
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

FEATURES

- Supporting LTE in 700 MHz band (700U, 3GPP band 13)
- LTE 2Tx or 4Tx MIMO (SW switchable)
- Output power: Up to 2x60W or 4x30W
- 10MHz LTE carrier with 4Rx Diversity
- Convection-cooled (fan-less)
- Supports AISG 2.0 ALD devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in 700U band
- MIMO scheme operation selection (2Tx or 4Tx) by software only
- Improves downlink spectral efficiency through MIMO4
- Increases LTE coverage thanks to 4Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options: Pole or Wall



4x30W with 4T4R
or
2x60W with 2T4R

Can be switched between modes via SW w/o site visit

Alcatel·Lucent

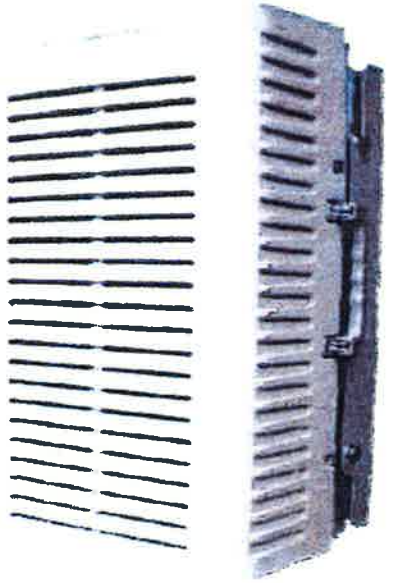
Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	U700 (C) (3GPP bands 13): DL: 746 - 756 MHz / UL: 777 - 787 MHz
Instantaneous bandwidth - #carriers	10MHz – 1 LTE carrier (in 10MHz occupied bandwidth)
LTE carrier bandwidth	10 MHz
RF output power	2x60W or 4x30W (by SW)
Noise figure – RX Diversity scheme	2 dB typ. (<2.5 dB max) – 2 or 4 way Rx diversity
Sizes (HxWxD) in mm (in.) Volume in L Weight in kg (lb) (w/o mounting HW)	550 x 305 x 230 (21.6" x 12.0" x 9") (with solar shield) 38 (with solar shield) 26 (57.2) (with solar shield)
DC voltage range DC power consumption	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 550W typical @100% RF load (in 2Tx or 4TX mode)
Environmental conditions Wind load (@150km/h or 93mph)	-40°C (-40°F) /+55°C (+131°F) IP65 Frontal:<200N / Lateral :<150N
Antenna ports	4 ports 7/16 DIN female (50 ohms) VSWR < 1.5
CPRI ports	2 CPRI ports (HW ready for Rate7, 9.8 Gbps) SFP single mode dual fiber
AISG interfaces	1 AISG2.0 output (RS485) Integrated Smart Bias Tees (x2)
Misc. Interfaces	4 external alarms (1 connector) – 4 RF Tx & 4 RF Rx monitor ports - 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27

PCS RF MODULES

RRH1900 2X60 - HW CHARACTERISTICS

LA6.0.1/13.3

		RRH2x60
RF Output Power		2x60W
Instantaneous Bandwidth		20MHz
Transmitter		2 TX
Receiver	1900 HW version	2 Branch RX – LA6.0.1
	1900A HW version	4 Branch RX – LR13.3
Features		AISG 2.0 for RET/TMA
		Internal Smart Bias-T
Power		-48VDC
CPRI Ports		2 CPRI Rate 3 Ports
External Alarms		4 External User Alarms
Monitor Ports		TX
Environmental		GR487 Compliance
RF Connectors		7/16 DIN (top mounted)



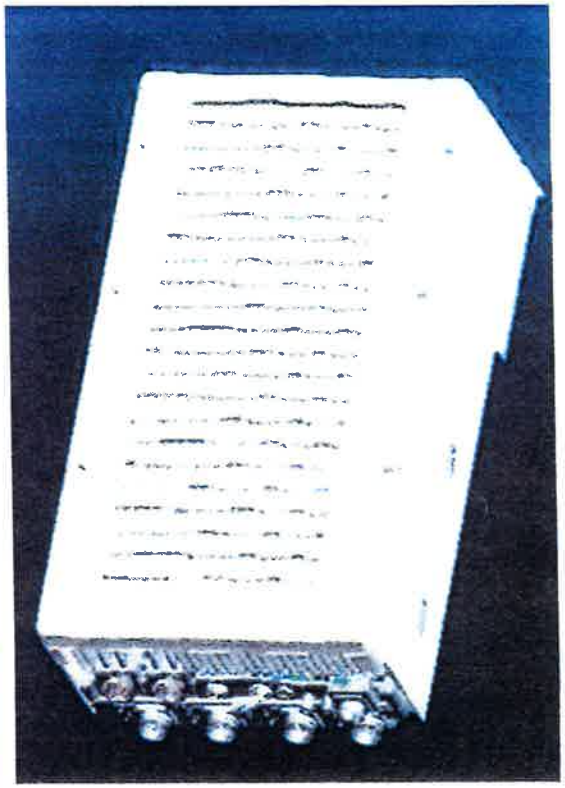
** Not a Verizon Wireless deployed product

NEW PCS RF MODULES FOR VZW

RRH2X60 - HW CHARACTERISTICS

LR14.3

	RRH2x60
RF Output Power	2x60W (4x30W HW Ready)
Instantaneous Bandwidth	60MHz
Target Reliability (Annual Return Rate)	<2%
Receiver	4 Branch Rx
Features	AISG 2.0 for RET/TMA
Power	-48VDC
	Internal Smart Bias-T
CPRI Ports	2 CPRI Rate 5 Ports
External Alarms	4 External User Alarms
Monitor Ports	TX, RX
Environmental	GR487 Compliance
RF Connectors	7/16 DIN (downward facing)
Dimensions	22"(h) x 12"(w)x 9.4" (d)**
Weight	55lb**



**- Includes solar shield but not mounting brackets (8 lbs.)

B66A RRH 4X45 - PHYSICAL CHARACTERISTICS- TARGET 15.1

B4 RRH4x45-4R (AWS-Extension Band)	
Frequency Band	**LR15.1 – B4 / LR16.1 B66 (AWS 1 and 3 only)**
RF Output Power	**2x90W/4x45W (SW configurable)**
Operational range	**2110-2180 MHz, DL/ 1710-1780 MHz UL**
Instantaneous Bandwidth	**70MHz**
Configuration (HW readiness)	**LTE: 2T2R, 2T4R, 4T4R**
Carrier Bandwidths	**5, 10, 15 and 20 MHz**
Interfaces	**2x CPRI Rate 7 Ports Antenna Connectors 4.3-10**
AISG Support	**AISG 2.0 for RET Internal Smart Bias T**
Monitor Ports	**NA (Spec An to replace ports)**
Environmental	**GR487 Compliance / GR3178 Compliance (with exceptions)**
Mounting options	**Pole/Wall**
Connectors location	**All bottom**
External Alarms	**4**
Annual Return Rate (Target)	**<2%**
Operating Temperature	**-40 C to +55 C (without solar load)**

- Commercial Product Will include B66 support of AWS 1 and 3.
- Lower AWS 3 UL Not in 3GPP Band 66 Definition

Physical Dimensions – Not to Exceed		
	W/O Solar Shield	With Solar Shield
Dimensions HxWxD	H = 26in (H=660mm) W = 11.4in (W=290mm) D = 5.9in (D=150mm)	H = 26.6in (H=675mm) W = 12in (W=304mm) D = 6.8n (D=173mm)
Volume	29l	35.5l
Weight		64lbs / 29kg

Product Data Sheet HB158-1-08U8-S8J18

HYBRIFLEX™ RRH Hybrid Feeder Cabling Solution, 1-5/8", Single-Mode Fiber

Product Description

RFS' HYBRIFLEX Remote Radio Head (RRH) hybrid feeder cabling solution combines optical fiber and DC power for RRHs in a single lightweight aluminum corrugated cable, making it the world's most innovative solution for RRH deployments.

It was developed to reduce installation complexity and costs at Cellular sites. HYBRIFLEX allows mobile operators deploying an RRH architecture to standardize the RRH installation process and eliminate the need for and cost of cable grounding. HYBRIFLEX combines optical fiber (multi-mode or single-mode) and power in a single corrugated cable. It eliminates the need for junction boxes and can connect multiple RRHs with a single feeder. Standard RFS CELLFLEX® accessories can be used with HYBRIFLEX cable. Both pre-connectorized and on-site options are available.

Figure 1: HYBRIFLEX Series

Features/Benefits

- Aluminum corrugated armor with outstanding bending characteristics – minimizes installation time and enables mechanical protection and shielding
- Same accessories as 1 5/8" coaxial cable
- Outer conductor grounding – Eliminates typical grounding requirements and saves on installation costs
- Lightweight solution and compact design – Decreases tower loading
- Robust cabling – Eliminates need for expensive cable trays and ducts
- Installation of tight bundled fiber optic cable pairs directly to the RRH – Reduces CAPEX and wind load by eliminating need for interconnection
- Optical fiber and power cables housed in single corrugated cable – Saves CAPEX by standardizing RRH cable installation and reducing installation requirements
- Outdoor polyethylene jacket – Ensures long-lasting cable protection

Technical Specifications

Outer Conductor Armor	Corrugated Aluminum	[mm (in)]	46.5 (1.83)
Jacket	Polyethylene, PE	[mm (in)]	50.3 (1.98)
UV-Protection	Individual and External Jacket		Yes
Weight, Approximate		[kg/m (lb/ft)]	1.9 (1.30)
Minimum Bending Radius, Single Bending		[mm (in)]	200 (8)
Minimum Bending Radius, Repeated Bending		[mm (in)]	500 (20)
Recommended/Maximum Clamp Spacing		[m (ft)]	1.0 / 1.2 (3.25 / 4.0)
DC-Resistance Outer Conductor Armor		[Ω/km (Ω/1000ft)]	068 (0.205)
DC-Resistance Power Cable, 8.4mm² (8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Version			Single-mode OM3
Quantity, Fiber Count			16 (8 pairs)
Core/Clad		[µm]	50/125
Primary Coating (Acrylate)		[µm]	245
Buffer Diameter, Nominal		[µm]	900
Secondary Protection, Jacket, Nominal		[mm (in)]	2.0 (0.08)
Minimum Bending Radius		[mm (in)]	104 (4.1)
Insertion Loss @ wavelength 850nm		dB/km	3.0
Insertion Loss @ wavelength 1310nm		dB/km	1.0
Standards (Meets or exceeds)			UL94-V0, UL1666 RoHS Compliant
Size (Power)		[mm² (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm² (AWG)]	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		[mm (in)]	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-95-658 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to149)

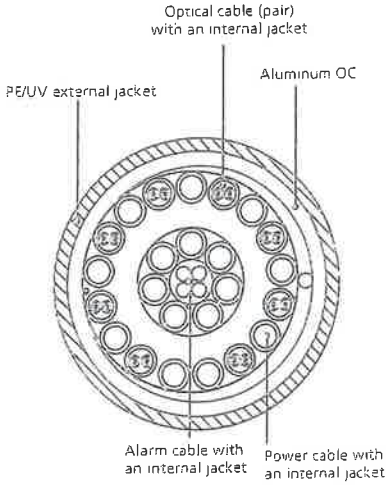


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

	General	Power	Density					
Site Name: Bethel W								
Tower Height: 155'								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*AT&T GSM	2	296	127	0.0145	880	0.5867	0.25%	
*AT&T GSM	8	427	127	0.0839	1900	1.0000	0.84%	
*AT&T UMTS	1	500	127	0.0123	880	0.5867	0.21%	
*AT&T UMTS	1	500	127	0.0123	1900	1.0000	0.12%	
*AT&T LTE	1	500	127	0.0123	740	0.4933	0.25%	
*T-Mobile LTE	2	24	117	0.0014	2100	1.0000	0.01%	
*T-Mobile GSM/UMTS	2	12	117	0.0007	1950	1.0000	0.01%	
*T-Mobile UMTS	2	12	117	0.0007	2100	1.0000	0.01%	
*Nextel iDEN	24	100	146	0.0440	851	0.5673	0.78%	
*Clearwire	2	153	157	0.0048	2496	1.0000	0.05%	
*Clearwire	1	211	157	0.0033	11 GHz	1.0000	0.03%	
*Sprint CDMA/LTE	4	13	157.4	0.0008	1900	1.0000	0.01%	
*Sprint CDMA/LTE	1	12	157.4	0.0002	850	0.5667	0.00%	
*Sprint CDMA/LTE	2	13	157.4	0.0004	2500	1.0000	0.00%	
*Sprint/Nextel WiMAX	3	562	157	0.0266	2657	1.0000	0.27%	
*Sprint/Nextel microwave	2	4	157	0.0001	22500	1.0000	0.00%	
*Sprint/Nextel microwave	2	4	157	0.0001	22500	1.0000	0.00%	
Verizon	**1**	**2189**	**140**	**0.0402**	**1970**	**1.0000**	**4.02%**	
Verizon	**9**	**392**	**140**	**0.0647**	**869**	**0.5793**	**11.17%**	
Verizon	**1**	**2149**	**140**	**0.0394**	**2145**	**1.0000**	**3.94%**	
Verizon	**1**	**638**	**140**	**0.0117**	**746**	**0.4973**	**2.35%**	
								24.3%
* Source: Siting Council								

ATTACHMENT 3

Tower Engineering Solutions
Phone (972) 483-0607, Fax (972) 975-9615
8445 Freeport Parkway, Suite 375, Irving, Texas 75063

Structural Analysis Report

Existing 155 ft. SUMMIT Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT00248-S

Customer Site Name: North Bethel

Carrier Name: Verizon

Carrier Site Number: N/A

Carrier Site Name: Bethel West

Site Location: 11 Francis J. Clarke Circle

Bethel, Connecticut

Fairfield County

Latitude: 41.360522

Longitude: -73.424474

Analysis Result:

Max Structural Usage: 87.4% [Pass]

Max Foundation Usage: 71% [Pass]

Report Prepared By : Stacey Hesselbein

Introduction

The purpose of this report is to summarize the analysis results on the 155 ft. SUMMIT Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Tower Drawings prepared by Summit Manufacturing LLC., Job # 4071 Dated 10/22/1998
Foundation Drawing	Foundation Design prepared by Paul J. Ford and Company, Job # 29200-1210 Dated 08/17/2000
Geotechnical Report	Geotechnical Report prepared by Jaworski Geotech Inc., Project # C98342G Dated 08/06/1998
Modification Drawings	N/A

Analysis Criteria

The analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA/EIA 222-F. In accordance with this standard, the structure was analyzed using **TESPoles,** a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Basic Wind Speed Used in the Analysis:	85.0 mph (fastest mile)
Basic Wind Speed with Ice:	74 mph (fastest mile) with 1/2" radial ice concurrent
Operational Wind Speed:	50 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-F / 2005 Connecticut State Building Code

Existing Antennas, Mounts and Transmission Lines

The table below summarizes the antennas, mounts and transmission lines that were considered in the analysis as existing on the tower.

Items	Elevation (ft.)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	157.4	3	RFS - APXVSPP18-C-A20 - Panel	(1)Low Profile Platform (1)Collar Mount	(4) 1 1/4"	Sprint
2		3	RFS - APXVTM14-C-120 - Panel			
3		3	Alcatel - 1900MHz RRH - RRU			
4		3	Alcatel - 800 MHz RRH - RRU			
5		3	Alcatel - TD-RRH8x20-25 - RRH			
6		3	Alcatel - 800MHz External Notch Filter			
7		4	RFS - ACU-A20-N - RET			
8	137.0	2	Antel - BXA-70063-4CF-EDIN-X - Panel	(1)Low Profile Platform	(1) 1/2" (12) 1 5/8"	Verizon
9		1	Swedcom - SLCP 2x6014 - Panel			
10		3	Antel - BXA-171063-8BF-EDIN-X - Panel			
12		2	Antel - LPA-80080/4CF - Panel			
13		2	Antel - LPA-80080-6CF-EDIN - Panel			
14		2	Antel - LPA-80063/6CF - Panel			
18		6	RFS - FD9R6004/2C-3L - Diplexer			
20		1	GPS			
21	127.0	3	Powerwave - 7770.00 - Panel	(1)Low Profile Platform	(9) 1 1/4" (1) Fiber (2) DC	AT&T
22		3	Powerwave - P65-16-XL-2 - Panel			
23		6	Powerwave - LGP21401 - TMA			
24		6	Ericsson - RRUS-11 - RRU			
25		1	Raycap - DC6-48-60-18-8F - SP			
26	117.0	3	Ericsson - AIR 21 B2A/B4P - Panel	(3) T-Arms (Valmont P/N RMV12-3xx)	*(12) 1 5/8" **(1) 1 5/8" Hybrid	T-Mobile
27		3	Ericsson - AIR 21 B4A/B2P - Panel			

*The (12)1 5/8" Coax and are considered double stacked running outside of the pole shaft
**The (1) 1 5/8" Hybrid is considered running outside of the pole shaft

Proposed Carrier's Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier's final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

Items	Elevation (ft.)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
11	137.0	6	Commscope - SBNHH-1D65B - Panel	(1)Low Profile Platform	(10) 1 5/8" (2) 1 5/8" Hybrid	Verizon
12		2	Antel - LPA-80080/4CF - Panel			
13		2	Antel - LPA-80080-6CF-EDIN - Panel			
14		2	Antel - LPA-80063/6CF - Panel			
15		3	Alcatel - 4X45 RRH AWS -RRU			
16		3	Alcatel - RRH2X60-PCS - RRU			
17		3	Alcatel - RRH2X60-700 - RRU			
18		6	RFS - FD9R6004/2C-3L - Diplexer			
19		2	RFS - DB-T1-6Z-8AB-0Z -Distribution Box			

All proposed transmission lines are considered running inside of the pole shafts.

Analysis Results

The results of the structural analysis, performed for the wind and ice loading and antenna equipment as defined above, are summarized as the following:

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**87.4%**	**67.8%**	**85.3%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Original Design Reactions	3850.0	32.4	38.7
Analysis Reactions	3470.1	31.2	42.2

The foundation has been investigated using the supplied documents and soils report and was found adequate. Therefore, no modification to the foundation will be required.

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-F for the installed antennas. Maximum twist/sway at the elevation of the proposed equipment is 2.2132 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the ANSI/TIA/EIA 222-F Standard under the design basic wind speed as specified in the Analysis Criteria.

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC.** Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.

2. The analysis is based on the presumption that the tower members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.

3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion.

4. An initial tension of 10% of the break strength on all the existing guy wires was assumed in all the structural analyses of guyed towers unless different values were provided by the client. **TES** cannot take responsibility for the deviations in the analysis results because of differences in the initial tension forces of the existing guy wires.

5. Secondary component or connection secondary components, welds and bolts are assumed to be able to carry their intended original design loads. **TES** cannot take responsibility for verification of the adequacy on the connections, bolts and welds present in the structure.

6. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed or/and ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.

7. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.

8. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.

9. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Usage Diagram - Max Stress 87.4% at 30.0ft

Structure:	CT00248-S-SBA	**Code:**	EIA/TIA-222-F	10/21/2015	
Site Name:	North Bethel	**Exposure:**	C		
Height:	155.00 (ft)	**Gh:**	1.69	Page: 1	
Base Elev:	0.000 (ft)				

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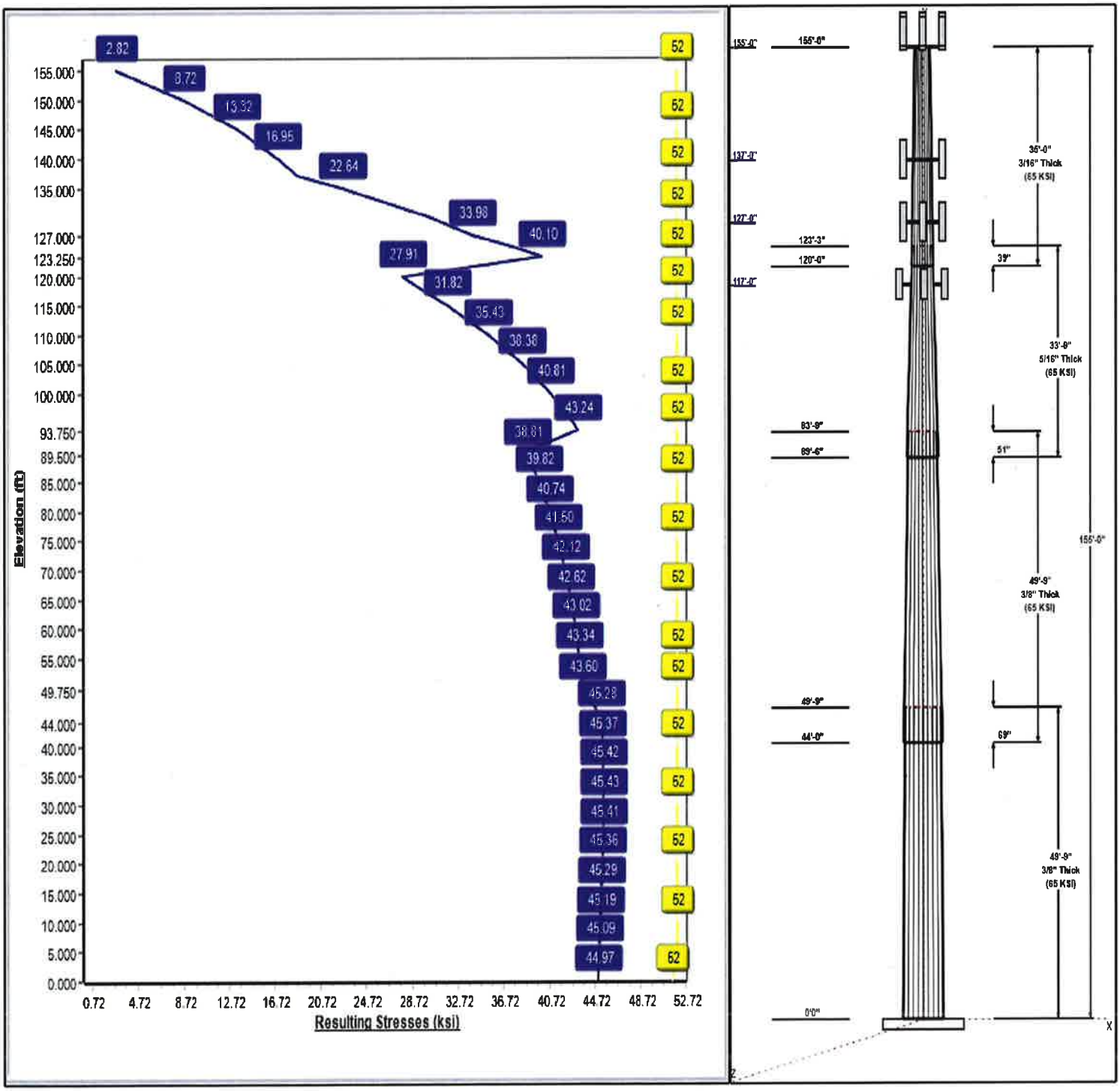
Dead Load Factor: 1.00
Wind Load Factor: 1.00

52 Alllowable Stress
45 Resulting Stress

Load Case : 85 mph Wind with 0 in Ice

Iterations: 24



Structure: CT00248-S-SBA

Type: Tapered
Site Name: North Bethel
Height: 155.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.27148

10/21/2015

TES Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	49.75	43.32	56.83	0.375		0.27148	65
2	49.75	32.13	45.63	0.375	Slip	0.27148	65
3	33.75	24.74	33.91	0.313	Slip	0.27148	65
4	35.00	16.50	26.00	0.188	Slip	0.27148	65

Discrete Appurtenances

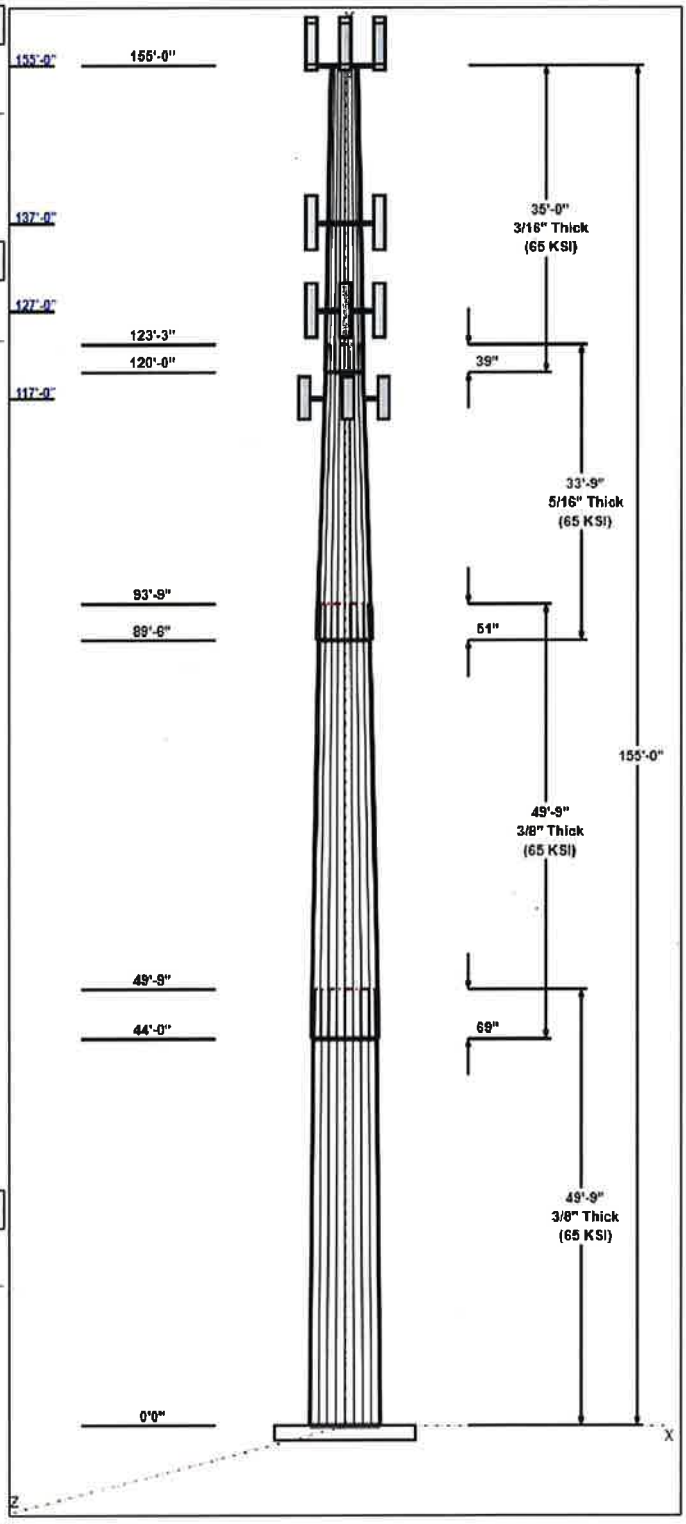
Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
155.00	157.40	3	1900MHz RRH	Sprint
155.00	155.00	1	6' Lightning rod	Verizon
155.00	157.40	3	800 MHz RRH	Sprint
155.00	157.40	4	ACU-A20-N	Sprint
155.00	157.40	3	ALU 800MHz External	Sprint
155.00	157.40	3	APXVSPP18-C-A20	Sprint
155.00	157.40	3	APXVTM14-C-120	Sprint
155.00	155.00	1	Collar Mount	Sprint
155.00	155.00	1	Low Profile Platform	Sprint
155.00	157.40	3	TD-RRH8x20-25	Sprint
137.00	137.00	3	4X45 RRH AWS	Verizon
137.00	137.00	2	DB-T1-6Z-8AB-0Z	Verizon
137.00	137.00	6	FD9R6004/2C-3L (3.1 lbs)	Verizon
137.00	137.00	1	Low Profile Platform	Verizon
137.00	137.00	2	LPA-80063/6CF	Verizon
137.00	137.00	2	LPA-80080-6CF-EDIN	Verizon
137.00	137.00	2	LPA-80080/4CF ___	Verizon
137.00	137.00	3	RRH2X60-700	Verizon
137.00	137.00	3	RRH2X60-PCS	Verizon
137.00	137.00	6	SBNHH-1D65B	Verizon
127.00	127.00	3	7770.00	AT&T
127.00	127.00	1	DC6-48-60-18-8F	AT&T
127.00	127.00	6	LGP21401	AT&T
127.00	127.00	1	Low Profile Platform	AT&T
127.00	127.00	3	P65-16-XL-2	AT&T
127.00	127.00	6	RRUS-11	AT&T
117.00	117.00	3	AIR 21, 1.3M, B2A B4P	T-Mobile
117.00	117.00	3	AIR 21, 1.3M, B4A B2P	T-Mobile
117.00	117.00	3	T-Arms	T-Mobile

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	155.00	Inside	1 1/4" Coax	Sprint
0.00	137.00	Inside	1 5/8" Coax	Verizon
0.00	137.00	Inside	1 5/8" Hybrid	Verizon
0.00	127.00	Inside	1 1/4" Coax	AT&T
0.00	127.00	Inside	3/4" DC	AT&T
0.00	127.00	Inside	3/8" Fiber	AT&T
0.00	117.00	Outside	1 5/8" Coax	T-Mobile
0.00	117.00	Outside	1 5/8" Hybrid	T-Mobile

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
20	2.25" 18J	75.0	Cluster



Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.7500	64.0	50.0	Clipped

Reactions

Load Case	Moment	Shear	Axial
85 mph Wind with 0" Ice	3470.1	31.2	35.7
73.61 mph Wind with 0.5" Ice	2898.4	25.5	42.2
50 mph Wind with 0" Ice	1202.5	10.8	35.8

Structure: CT00248-S-SBA - Coax Line Placement

Type: Monopole
Site Name: North Bethel
Height: 155.00 (ft)

10/21/2015

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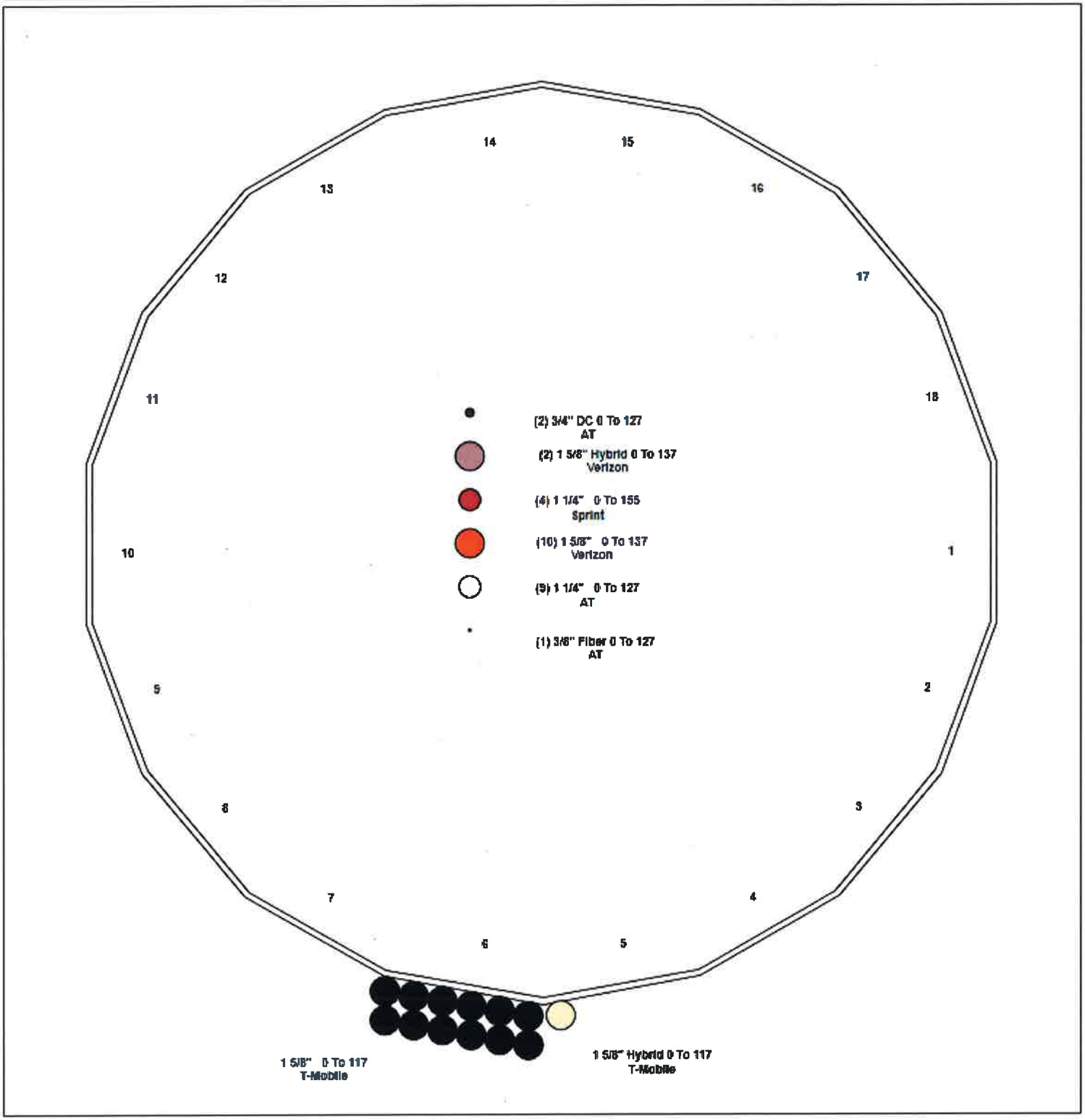


Shaft Properties

Structure:	CT00248-S-SBA	**Code:**	EIA/TIA-222-F	10/21/2015
Site Name:	North Bethel	**Exposure:**	C	
Height:	155.00 (ft)	**Gh:**	1.69	
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 5

TES Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	49.750	0.3750	65		0.00	10,014
2	18	49.750	0.3750	65	Slip	69.00	7,759
3	18	33.750	0.3125	65	Slip	51.00	3,305
4	18	35.000	0.1875	65	Slip	39.00	1,493
					Total Shaft Weight:		**22,571**

	Bottom						Top						
Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper
1	56.83	0.00	67.19	27057.20	25.31	151.5	43.32	49.75	51.12	11913.1	18.96	115.5	0.271484
2	45.63	44.00	53.87	13941.55	20.04	121.6	32.13	93.75	37.79	4814.44	13.69	85.67	0.271484
3	33.91	89.50	33.32	4751.23	17.72	108.5	24.74	123.2	24.23	1827.58	12.55	79.18	0.271484
4	26.00	120.0	15.36	1293.40	23.04	138.6	16.50	155.0	9.71	326.37	14.10	88	0.271484

Loading Summary

Structure:	CT00248-S-SBA	**Code:**	EIA/TIA-222-F	10/21/2015	
Site Name:	North Bethel	**Exposure:**	C		
Height:	155.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 6	

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	155.0	1900MHz RRH	3	44.00	2.91	1.00	75.20	3.110	1.00	0.00	2.40
2	155.0	6' Lightning rod	1	6.50	0.38	0.00	11.80	0.980	0.00	0.00	0.00
3	155.0	800 MHz RRH	3	53.00	2.49	0.92	74.10	2.680	0.92	0.00	2.40
4	155.0	ACU-A20-N	4	1.00	0.08	1.00	2.30	0.220	1.00	0.00	2.40
5	155.0	ALU 800MHz External Notch Filt	3	8.80	0.78	0.69	13.80	0.880	0.72	0.00	2.40
6	155.0	APXVSPP18-C-A20	3	57.00	8.26	0.82	106.50	8.730	0.82	0.00	2.40
7	155.0	APXVTM14-C-120	3	56.00	6.90	0.76	91.90	7.290	0.77	0.00	2.40
8	155.0	Collar Mount	1	250.00	5.00	0.75	425.00	7.500	0.75	0.00	0.00
9	155.0	Low Profile Platform	1	1500.00	22.00	1.00	1800.00	27.00	1.00	0.00	0.00
10	155.0	TD-RRH8x20-25	3	70.00	4.72	0.68	92.00	4.970	0.69	0.00	2.40
11	137.0	4X45 RRH AWS	3	62.00	3.01	0.82	83.10	3.230	0.83	0.00	0.00
12	137.0	DB-T1-6Z-8AB-0Z	2	44.00	5.60	1.00	46.00	5.870	1.00	0.00	0.00
13	137.0	FD9R6004/2C-3L (3.1 lbs)	6	3.10	0.36	0.62	5.40	0.440	0.65	0.00	0.00
14	137.0	Low Profile Platform	1	1200.00	22.00	1.00	1500.00	31.00	1.00	0.00	0.00
15	137.0	LPA-80063/6CF	2	27.00	10.34	0.94	0.00	10.82	0.94	0.00	0.00
16	137.0	LPA-80080-6CF-EDIN	2	21.00	10.68	0.93	69.30	11.17	0.93	0.00	0.00
17	137.0	LPA-80080/4CF ___	2	12.00	7.11	0.93	0.00	7.470	0.93	0.00	0.00
18	137.0	RRH2X60-700	3	60.00	3.96	0.73	80.10	4.230	0.74	0.00	0.00
19	137.0	RRH2X60-PCS	3	55.00	2.57	0.89	70.90	2.760	0.90	0.00	0.00
20	137.0	SBNHH-1D65B	6	50.71	8.33	0.82	87.00	8.800	0.82	0.00	0.00
21	127.0	7770.00	3	35.00	5.88	0.75	0.00	6.250	0.75	0.00	0.00
22	127.0	DC6-48-60-18-8F	1	31.80	2.57	1.00	49.50	2.770	1.00	0.00	0.00
23	127.0	LGP21401	6	14.10	1.29	0.64	21.20	1.420	0.66	0.00	0.00
24	127.0	Low Profile Platform	1	1500.00	22.00	1.00	1800.00	27.00	1.00	0.00	0.00
25	127.0	P65-16-XL-2	3	33.00	8.40	0.75	77.50	8.870	0.75	0.00	0.00
26	127.0	RRUS-11	6	55.00	4.42	0.68	80.70	4.670	0.69	0.00	0.00
27	117.0	AIR 21, 1.3M, B2A B4P	3	91.50	6.58	0.83	129.20	6.970	0.83	0.00	0.00
28	117.0	AIR 21, 1.3M, B4A B2P	3	90.40	6.58	0.83	128.10	6.970	0.83	0.00	0.00
29	117.0	T-Arms	3	350.00	8.00	0.75	420.00	10.50	0.75	0.00	0.00
		Totals:	**84**	**8,634.86**			**11,319.10**				

Linear Appurtenances

			No Ice		Ice		
Bottom Elev. (ft)	Top Elev. (ft)	Description	Weight (lb/ft)	CaAa (sf/ft)	Weight (lb/ft)	CaAa (sf/ft)	Exposed
0.00	155.0	(4) 1 1/4" Coax	2.64	0.00	0.00	0.00	Inside
0.00	137.0	(10) 1 5/8" Coax	10.40	0.00	0.00	0.00	Inside
0.00	137.0	(2) 1 5/8" Hybrid	2.20	0.00	0.00	0.00	Inside
0.00	127.0	(9) 1 1/4" Coax	5.94	0.00	0.00	0.00	Inside
0.00	127.0	(2) 3/4" DC	0.80	0.00	0.00	0.00	Inside
0.00	127.0	(1) 3/8" Fiber	0.06	0.00	0.00	0.00	Inside
0.00	117.0	(12) 1 5/8" Coax	12.48	0.33	14.25	0.37	Outside
0.00	117.0	(1) 1 5/8" Hybrid	1.10	0.16	1.60	0.21	Outside
		Totals:	**4,587.86**		**1,854.45**		

Shaft Section Properties

Structure: CT00248-S-SBA
Site Name: North Bethel
Height: 155.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

10/21/2015

Tower Engineering Solutions

Increment Length: 5 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)
0.00		0.3750	56.830	67.193	27057.2	25.31	151.55	65	52	0.0
5.00		0.3750	55.473	65.578	25152.0	24.67	147.93	65	52	1129.5
10.00		0.3750	54.115	63.962	23338.5	24.03	144.31	65	52	1102.0
15.00		0.3750	52.758	62.346	21614.3	23.40	140.69	65	52	1074.5
20.00		0.3750	51.400	60.731	19977.1	22.76	137.07	65	52	1047.0
25.00		0.3750	50.043	59.115	18424.8	22.12	133.45	65	52	1019.5
30.00		0.3750	48.685	57.499	16955.1	21.48	129.83	65	52	992.0
35.00		0.3750	47.328	55.884	15565.7	20.84	126.21	65	52	964.5
40.00		0.3750	45.971	54.268	14254.3	20.21	122.59	65	52	937.1
44.00	Bot - Section 2	0.3750	44.885	52.976	13259.9	19.69	119.69	65	52	729.9
45.00		0.3750	44.613	52.653	13018.7	19.57	118.97	65	52	362.5
49.75	Top - Section 1	0.3750	44.074	52.010	12548.2	19.31	117.53	65	52	1691.7
50.00		0.3750	44.006	51.930	12489.8	19.28	117.35	65	52	44.2
55.00		0.3750	42.648	50.314	11360.0	18.64	113.73	65	52	869.8
60.00		0.3750	41.291	48.698	10300.4	18.00	110.11	65	52	842.3
65.00		0.3750	39.934	47.083	9308.9	17.37	106.49	65	52	814.8
70.00		0.3750	38.576	45.467	8383.1	16.73	102.87	65	52	787.3
75.00		0.3750	37.219	43.852	7520.8	16.09	99.25	65	52	759.8
80.00		0.3750	35.861	42.236	6719.8	15.45	95.63	65	52	732.3
85.00		0.3750	34.504	40.620	5977.8	14.81	92.01	65	52	704.9
89.50	Bot - Section 3	0.3750	33.282	39.166	5358.6	14.24	88.75	65	52	610.9
90.00		0.3750	33.146	39.005	5292.5	14.18	88.39	65	52	123.1
93.75	Top - Section 2	0.3125	32.753	32.176	4278.3	17.07	104.81	65	52	907.0
95.00		0.3125	32.414	31.840	4145.5	16.88	103.72	65	52	136.1
100.00		0.3125	31.057	30.493	3641.5	16.11	99.38	65	52	530.3
105.00		0.3125	29.699	29.147	3180.1	15.35	95.04	65	52	507.4
110.00		0.3125	28.342	27.801	2759.5	14.58	90.69	65	52	484.4
115.00		0.3125	26.984	26.454	2377.7	13.82	86.35	65	52	461.5
117.00		0.3125	26.441	25.916	2235.4	13.51	84.61	65	52	178.2
120.00	Bot - Section 4	0.3125	25.627	25.108	2032.8	13.05	82.01	65	52	260.4
123.25	Top - Section 3	0.1875	25.120	14.837	1165.3	22.21	133.97	65	52	439.8
125.00		0.1875	24.645	14.554	1099.9	21.77	131.44	65	52	87.5
127.00		0.1875	24.102	14.231	1028.3	21.25	128.54	65	52	98.0
130.00		0.1875	23.287	13.747	926.7	20.49	124.20	65	52	142.8
135.00		0.1875	21.930	12.939	772.8	19.21	116.96	65	52	227.0
137.00		0.1875	21.387	12.616	716.3	18.70	114.06	65	52	87.0
140.00		0.1875	20.572	12.131	636.9	17.94	109.72	65	52	126.3
145.00		0.1875	19.215	11.323	517.9	16.66	102.48	65	52	199.5
150.00		0.1875	17.857	10.515	414.8	15.38	95.24	65	52	185.8
155.00		0.1875	16.500	9.708	326.4	14.11	88.00	65	52	172.0
										22570.6

Wind Loading - Shaft

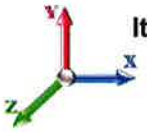
Structure: CT00248-S-SBA
Site Name: North Bethel
Height: 155.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

10/21/2015

TES Tower Engineering Solutions

Load Case: 85 mph Wind with 0" Ice
Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 24

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00	18.496	31.26	402.55	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		0.00	1.00	18.496	31.26	392.93	0.650	0.000	5.00	23.396	15.21	475.4	0.0	1129.5
10.00		0.00	1.00	18.496	31.26	383.32	0.650	0.000	5.00	22.831	14.84	463.9	0.0	1102.0
15.00		0.00	1.00	18.496	31.26	373.70	0.650	0.000	5.00	22.265	14.47	452.4	0.0	1074.5
20.00		0.00	1.00	18.496	31.26	364.09	0.650	0.000	5.00	21.700	14.10	440.9	0.0	1047.0
25.00		0.00	1.00	18.496	31.26	354.47	0.650	0.000	5.00	21.134	13.74	429.4	0.0	1019.5
30.00		0.00	1.00	18.496	31.26	344.86	0.650	0.000	5.00	20.568	13.37	417.9	0.0	992.0
35.00		0.00	1.02	18.810	31.79	338.07	0.650	0.000	5.00	20.003	13.00	413.3	0.0	964.5
40.00		0.00	1.06	19.541	33.02	334.70	0.650	0.000	5.00	19.437	12.63	417.2	0.0	937.1
44.00	Bot - Section 2	0.00	1.09	20.081	33.94	331.27	0.650	0.000	4.00	15.143	9.84	334.0	0.0	729.9
45.00		0.00	1.09	20.210	34.15	330.33	0.650	0.000	1.00	3.792	2.46	84.2	0.0	362.5
49.75	Top - Section 1	0.00	1.12	20.798	35.15	325.41	0.650	0.000	4.75	17.701	11.51	404.4	0.0	1691.7
50.00		0.00	1.13	20.827	35.20	330.77	0.650	0.000	0.25	0.917	0.60	21.0	0.0	44.2
55.00		0.00	1.16	21.402	36.17	324.96	0.650	0.000	5.00	18.053	11.73	424.4	0.0	869.8
60.00		0.00	1.19	21.941	37.08	318.55	0.650	0.000	5.00	17.487	11.37	421.5	0.0	842.3
65.00		0.00	1.21	22.449	37.94	311.63	0.650	0.000	5.00	16.922	11.00	417.3	0.0	814.8
70.00		0.00	1.24	22.929	38.75	304.24	0.650	0.000	5.00	16.356	10.63	412.0	0.0	787.3
75.00		0.00	1.26	23.386	39.52	296.44	0.650	0.000	5.00	15.791	10.26	405.6	0.0	759.8
80.00		0.00	1.29	23.821	40.26	288.27	0.650	0.000	5.00	15.225	9.90	398.4	0.0	732.3
85.00		0.00	1.31	24.237	40.96	279.77	0.650	0.000	5.00	14.659	9.53	390.3	0.0	704.9
89.50	Bot - Section 3	0.00	1.33	24.597	41.57	271.86	0.650	0.000	4.50	12.710	8.26	343.4	0.0	610.9
90.00		0.00	1.33	24.636	41.63	270.97	0.650	0.000	0.50	1.410	0.92	38.2	0.0	123.1
93.75	Top - Section 2	0.00	1.35	24.925	42.12	264.18	0.650	0.000	3.75	10.395	6.76	284.6	0.0	907.0
95.00		0.00	1.35	25.020	42.28	267.04	0.650	0.000	1.25	3.394	2.21	93.3	0.0	136.1
100.00		0.00	1.37	25.389	42.91	257.74	0.650	0.000	5.00	13.223	8.59	368.8	0.0	530.3
105.00		0.00	1.39	25.745	43.51	248.20	0.650	0.000	5.00	12.657	8.23	358.0	0.0	507.4
110.00		0.00	1.41	26.090	44.09	238.43	0.650	0.000	5.00	12.092	7.86	346.5	0.0	484.4
115.00		0.00	1.43	26.423	44.66	228.46	0.650	0.000	5.00	11.526	7.49	334.6	0.0	461.5
117.00	Appurtenance(s)	0.00	1.44	26.554	44.88	224.41	0.650	0.000	2.00	4.452	2.89	129.9	0.0	178.2
120.00	Bot - Section 4	0.00	1.45	26.747	45.20	218.29	0.650	0.000	3.00	6.509	4.23	191.2	0.0	260.4
123.25	Top - Section 3	0.00	1.46	26.952	45.55	211.58	0.650	0.000	3.25	6.923	4.50	205.0	0.0	439.8
125.00		0.00	1.46	27.060	45.73	211.15	0.650	0.000	1.75	3.629	2.36	107.9	0.0	87.5
127.00	Appurtenance(s)	0.00	1.47	27.183	45.94	206.96	0.650	0.000	2.00	4.062	2.64	121.3	0.0	98.0
130.00		0.00	1.48	27.365	46.25	200.64	0.650	0.000	3.00	5.924	3.85	178.1	0.0	142.8
135.00		0.00	1.50	27.662	46.75	189.96	0.650	0.000	5.00	9.420	6.12	286.2	0.0	227.0
137.00	Appurtenance(s)	0.00	1.50	27.778	46.95	185.65	0.650	0.000	2.00	3.610	2.35	110.1	0.0	87.0
140.00		0.00	1.51	27.951	47.24	179.13	0.650	0.000	3.00	5.245	3.41	161.0	0.0	126.3
145.00		0.00	1.53	28.233	47.71	168.16	0.650	0.000	5.00	8.289	5.39	257.1	0.0	199.5
150.00		0.00	1.54	28.507	48.18	157.03	0.650	0.000	5.00	7.723	5.02	241.9	0.0	185.8
155.00	Appurtenance(s)	0.00	1.56	28.776	48.63	145.78	0.650	0.000	5.00	7.158	4.65	226.3	0.0	172.0
								Totals:	**155.00**			**11,606.7**		**22,570.6**

Discrete Appurtenance Forces

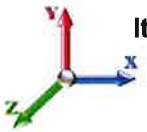
Structure: CT00248-S-SB
Site Name: North Bethel
Height: 155.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

10/21/2015

TES Tower Engineering Solutions

Load Case: 85 mph Wind with 0" Ice
Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	155.00	ALU 800MHz External Notch	3	28.902	48.845	0.69	1.61	26.40	0.000	2.400	78.86	0.00	189.28
2	155.00	1900MHz RRH	3	28.902	48.845	1.00	8.73	132.00	0.000	2.400	426.42	0.00	1023.40
3	155.00	6' Lightning rod	1	28.776	48.631	0.00	0.38	6.50	0.000	0.000	18.48	0.00	0.00
4	155.00	800 MHz RRH	3	28.902	48.845	0.92	6.87	159.00	0.000	2.400	335.68	0.00	805.64
5	155.00	ACU-A20-N	4	28.902	48.845	1.00	0.32	4.00	0.000	2.400	15.63	0.00	37.51
6	155.00	TD-RRH8x20-25	3	28.902	48.845	0.68	9.63	210.00	0.000	2.400	470.32	0.00	1128.76
7	155.00	APXVSPP18-C-A20	3	28.902	48.845	0.82	20.32	171.00	0.000	2.400	992.51	0.00	2382.02
8	155.00	APXVTM14-C-120	3	28.902	48.845	0.76	15.73	168.00	0.000	2.400	768.43	0.00	1844.23
9	155.00	Collar Mount	1	28.776	48.631	0.75	3.75	250.00	0.000	0.000	182.37	0.00	0.00
10	155.00	Low Profile Platform	1	28.776	48.631	1.00	22.00	1500.00	0.000	0.000	1069.88	0.00	0.00
11	137.00	SBNHH-1D65B	6	27.778	46.946	0.82	40.98	304.26	0.000	0.000	1924.00	0.00	0.00
12	137.00	RRH2X60-PCS	3	27.778	46.946	0.89	6.86	165.00	0.000	0.000	322.14	0.00	0.00
13	137.00	RRH2X60-700	3	27.778	46.946	0.73	8.67	180.00	0.000	0.000	407.13	0.00	0.00
14	137.00	LPA-80080/4CF	2	27.778	46.946	0.93	13.22	24.00	0.000	0.000	620.84	0.00	0.00
15	137.00	LPA-80080-6CF-EDIN	2	27.778	46.946	0.93	19.86	42.00	0.000	0.000	932.57	0.00	0.00
16	137.00	Low Profile Platform	1	27.778	46.946	1.00	22.00	1200.00	0.000	0.000	1032.80	0.00	0.00
17	137.00	FD9R6004/2C-3L (3.1 lbs)	6	27.778	46.946	0.62	1.34	18.60	0.000	0.000	62.87	0.00	0.00
18	137.00	DB-T1-6Z-8AB-0Z	2	27.778	46.946	1.00	11.20	88.00	0.000	0.000	525.79	0.00	0.00
19	137.00	4X45 RRH AWS	3	27.778	46.946	0.82	7.40	186.00	0.000	0.000	347.61	0.00	0.00
20	137.00	LPA-80063/6CF	2	27.778	46.946	0.94	19.44	54.00	0.000	0.000	912.59	0.00	0.00
21	127.00	LGP21401	6	27.183	45.940	0.64	4.95	84.60	0.000	0.000	227.57	0.00	0.00
22	127.00	7770.00	3	27.183	45.940	0.75	13.23	105.00	0.000	0.000	607.79	0.00	0.00
23	127.00	DC6-48-60-18-8F	1	27.183	45.940	1.00	2.57	31.80	0.000	0.000	118.07	0.00	0.00
24	127.00	P65-16-XL-2	3	27.183	45.940	0.75	18.90	99.00	0.000	0.000	868.26	0.00	0.00
25	127.00	Low Profile Platform	1	27.183	45.940	1.00	22.00	1500.00	0.000	0.000	1010.68	0.00	0.00
26	127.00	RRUS-11	6	27.183	45.940	0.68	18.03	330.00	0.000	0.000	828.46	0.00	0.00
27	117.00	T-Arms	3	26.554	44.876	0.75	18.00	1050.00	0.000	0.000	807.77	0.00	0.00
28	117.00	AIR 21, 1.3M, B4A B2P	3	26.554	44.876	0.83	16.38	271.20	0.000	0.000	735.26	0.00	0.00
29	117.00	AIR 21, 1.3M, B2A B4P	3	26.554	44.876	0.83	16.38	274.50	0.000	0.000	735.26	0.00	0.00
						Totals:		**8,634.86**			**17,386.01**		

Total Applied Force Summary

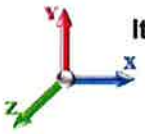
Structure:	CT00248-S-SB	**Code:**	EIA/TIA-222-F	10/21/2015	
Site Name:	North Bethel	**Exposure:**	C		
Height:	155.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 10	

TES Tower Engineering Solutions

Load Case: 85 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 24

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		551.95	1307.57	0.00	0.00
10.00		540.46	1280.08	0.00	0.00
15.00		528.96	1252.60	0.00	0.00
20.00		517.47	1225.11	0.00	0.00
25.00		505.98	1197.62	0.00	0.00
30.00		494.49	1170.13	0.00	0.00
35.00		491.19	1142.65	0.00	0.00
40.00		498.15	1115.16	0.00	0.00
44.00		400.54	872.34	0.00	0.00
45.00		100.91	398.09	0.00	0.00
49.75		486.21	1860.89	0.00	0.00
50.00		25.30	53.12	0.00	0.00
55.00		513.05	1047.88	0.00	0.00
60.00		512.33	1020.39	0.00	0.00
65.00		510.24	992.91	0.00	0.00
70.00		506.91	965.42	0.00	0.00
75.00		502.47	937.93	0.00	0.00
80.00		497.03	910.44	0.00	0.00
85.00		490.65	882.96	0.00	0.00
89.50		435.08	771.16	0.00	0.00
90.00		48.36	140.89	0.00	0.00
93.75		362.01	1040.59	0.00	0.00
95.00		119.18	180.67	0.00	0.00
100.00		473.91	708.36	0.00	0.00
105.00		464.57	685.45	0.00	0.00
110.00		454.57	662.55	0.00	0.00
115.00		443.97	639.64	0.00	0.00
117.00	(9) appurtenances	2452.12	1845.14	0.00	0.00
120.00		191.23	326.55	0.00	0.00
123.25		204.96	511.45	0.00	0.00
125.00		107.86	126.08	0.00	0.00
127.00	(20) appurtenances	3782.12	2292.43	0.00	0.00
130.00		178.07	188.52	0.00	0.00
135.00		286.25	303.21	0.00	0.00
137.00	(30) appurtenances	7198.48	2379.30	0.00	0.00
140.00		161.04	134.23	0.00	0.00
145.00		257.07	212.72	0.00	0.00
150.00		241.86	198.98	0.00	0.00
155.00	(25) appurtenances	4584.83	2812.14	0.00	7410.83
	Totals:	**31,121.82**	**35,793.35**	**0.00**	**7,410.83**

Resulting Forces and Deflections

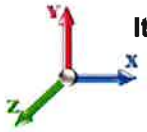
Structure: CT00248-S-SB
Site Name: North Bethel
Height: 155.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

10/21/2015

Tower Engineering Solutions

Load Case: 85 mph Wind with 0" Ice
Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 24

Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	Deflect X (in)	Deflect Z (in)	Deflect Resultant (in)	Rotation Sway (deg)	Rotation Twist (deg)
0.00	-31.178	-35.743	0.000	0.000	0.000	-3470.1	0.000	0.000	0.000	0.000	0.000
5.00	-30.733	-34.340	0.000	0.000	0.000	-3314.2	-0.096	0.000	0.096	-0.178	0.000
10.00	-30.293	-32.965	0.000	0.000	0.000	-3160.5	-0.381	0.000	0.381	-0.361	0.000
15.00	-29.859	-31.617	0.000	0.000	0.000	-3009.1	-0.861	0.000	0.861	-0.549	0.000
20.00	-29.432	-30.297	0.000	0.000	0.000	-2859.8	-1.540	0.000	1.540	-0.743	0.000
25.00	-29.010	-29.006	0.000	0.000	0.000	-2712.6	-2.425	0.000	2.425	-0.941	0.000
30.00	-28.595	-27.742	0.000	0.000	0.000	-2567.6	-3.520	0.000	3.520	-1.145	0.000
35.00	-28.177	-26.506	0.000	0.000	0.000	-2424.6	-4.831	0.000	4.831	-1.354	0.000
40.00	-27.738	-25.309	0.000	0.000	0.000	-2283.7	-6.365	0.000	6.365	-1.569	0.000
44.00	-27.359	-24.395	0.000	0.000	0.000	-2172.8	-7.757	0.000	7.757	-1.747	0.000
45.00	-27.302	-23.938	0.000	0.000	0.000	-2145.4	-8.128	0.000	8.128	-1.794	0.000
49.75	-26.797	-22.041	0.000	0.000	0.000	-2015.7	-10.022	0.000	10.022	-2.010	0.000
50.00	-26.815	-21.934	0.000	0.000	0.000	-2009.0	-10.128	0.000	10.128	-2.022	0.000
55.00	-26.345	-20.803	0.000	0.000	0.000	-1875.0	-12.364	0.000	12.364	-2.243	0.000
60.00	-25.870	-19.701	0.000	0.000	0.000	-1743.2	-14.834	0.000	14.834	-2.469	0.000
65.00	-25.392	-18.629	0.000	0.000	0.000	-1613.9	-17.544	0.000	17.544	-2.701	0.000
70.00	-24.912	-17.585	0.000	0.000	0.000	-1486.9	-20.499	0.000	20.499	-2.938	0.000
75.00	-24.431	-16.572	0.000	0.000	0.000	-1362.4	-23.705	0.000	23.705	-3.180	0.000
80.00	-23.950	-15.588	0.000	0.000	0.000	-1240.2	-27.166	0.000	27.166	-3.426	0.000
85.00	-23.467	-14.639	0.000	0.000	0.000	-1120.5	-30.887	0.000	30.887	-3.676	0.000
89.50	-23.012	-13.848	0.000	0.000	0.000	-1014.9	-34.460	0.000	34.460	-3.905	0.000
90.00	-22.981	-13.666	0.000	0.000	0.000	-1003.4	-34.871	0.000	34.871	-3.931	0.000
93.75	-22.575	-12.603	0.000	0.000	0.000	-917.22	-38.035	0.000	38.035	-4.125	0.000
95.00	-22.482	-12.361	0.000	0.000	0.000	-889.00	-39.123	0.000	39.123	-4.192	0.000
100.00	-22.014	-11.581	0.000	0.000	0.000	-776.59	-43.664	0.000	43.664	-4.477	0.000
105.00	-21.548	-10.831	0.000	0.000	0.000	-666.53	-48.502	0.000	48.502	-4.759	0.000
110.00	-21.086	-10.111	0.000	0.000	0.000	-558.79	-53.630	0.000	53.630	-5.033	0.000
115.00	-20.616	-9.450	0.000	0.000	0.000	-453.36	-59.038	0.000	59.038	-5.294	0.000
117.00	-18.020	-7.802	0.000	0.000	0.000	-412.12	-61.276	0.000	61.276	-5.398	0.000
120.00	-17.818	-7.449	0.000	0.000	0.000	-358.07	-64.711	0.000	64.711	-5.545	0.000
123.25	-17.577	-6.925	0.000	0.000	0.000	-300.16	-68.533	0.000	68.533	-5.694	0.000
125.00	-17.470	-6.778	0.000	0.000	0.000	-269.40	-70.632	0.000	70.632	-5.772	0.000
127.00	-13.487	-4.846	0.000	0.000	0.000	-234.46	-73.076	0.000	73.076	-5.902	0.000
130.00	-13.308	-4.627	0.000	0.000	0.000	-194.00	-76.837	0.000	76.837	-6.080	0.000
135.00	-13.003	-4.320	0.000	0.000	0.000	-127.46	-83.334	0.000	83.334	-6.327	0.000
137.00	-5.590	-2.746	0.000	0.000	0.000	-101.45	-85.999	0.000	85.999	-6.411	0.000
140.00	-5.421	-2.617	0.000	0.000	0.000	-84.686	-90.055	0.000	90.055	-6.522	0.000
145.00	-5.147	-2.423	0.000	0.000	0.000	-57.582	-96.960	0.000	96.960	-6.681	0.000
150.00	-4.887	-2.246	0.000	0.000	0.000	-31.847	-104.01	0.000	104.012	-6.804	0.000
155.00	-4.585	0.000	0.000	0.000	0.000	-7.411	0.000	0.000	111.165	-6.871	0.000

Resulting Stresses

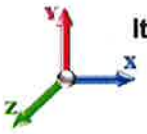
Structure: CT00248-S-SBA
Site Name: North Bethel
Height: 155.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

10/21/2015

Tower Engineering Solutions

Load Case: 85 mph Wind with 0" Ice
Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 24

Applied Stresses

Elev (ft)	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvt Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	fb Combined (ksi)	Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.53	0.94	0.00	0.00	0.00	44.41	44.97	51.6	0.872
5.00	0.52	0.94	0.00	0.00	0.00	44.53	45.09	52.0	0.867
10.00	0.52	0.95	0.00	0.00	0.00	44.65	45.19	52.0	0.869
15.00	0.51	0.97	0.00	0.00	0.00	44.75	45.29	52.0	0.871
20.00	0.50	0.98	0.00	0.00	0.00	44.83	45.36	52.0	0.873
25.00	0.49	0.99	0.00	0.00	0.00	44.89	45.41	52.0	0.874
30.00	0.48	1.00	0.00	0.00	0.00	44.92	45.43	52.0	0.874
35.00	0.47	1.02	0.00	0.00	0.00	44.92	45.42	52.0	0.874
40.00	0.47	1.03	0.00	0.00	0.00	44.87	45.37	52.0	0.873
44.00	0.46	1.04	0.00	0.00	0.00	44.81	45.31	52.0	0.872
45.00	0.45	1.05	0.00	0.00	0.00	44.79	45.28	52.0	0.871
49.75	0.42	1.04	0.00	0.00	0.00	43.14	43.60	52.0	0.839
50.00	0.42	1.04	0.00	0.00	0.00	43.13	43.59	52.0	0.839
55.00	0.41	1.06	0.00	0.00	0.00	42.89	43.34	52.0	0.834
60.00	0.40	1.07	0.00	0.00	0.00	42.58	43.02	52.0	0.828
65.00	0.40	1.09	0.00	0.00	0.00	42.18	42.62	52.0	0.820
70.00	0.39	1.10	0.00	0.00	0.00	41.69	42.12	52.0	0.810
75.00	0.38	1.12	0.00	0.00	0.00	41.08	41.50	52.0	0.798
80.00	0.37	1.14	0.00	0.00	0.00	40.33	40.74	52.0	0.784
85.00	0.36	1.16	0.00	0.00	0.00	39.40	39.82	52.0	0.766
89.50	0.35	1.18	0.00	0.00	0.00	38.41	38.81	52.0	0.747
90.00	0.35	1.19	0.00	0.00	0.00	38.29	38.69	52.0	0.744
93.75	0.39	1.41	0.00	0.00	0.00	42.78	43.24	52.0	0.832
95.00	0.39	1.42	0.00	0.00	0.00	42.35	42.81	52.0	0.824
100.00	0.38	1.45	0.00	0.00	0.00	40.35	40.81	52.0	0.785
105.00	0.37	1.49	0.00	0.00	0.00	37.92	38.38	52.0	0.738
110.00	0.36	1.53	0.00	0.00	0.00	34.97	35.43	52.0	0.682
115.00	0.36	1.57	0.00	0.00	0.00	31.35	31.82	52.0	0.612
117.00	0.30	1.40	0.00	0.00	0.00	29.70	30.10	52.0	0.579
120.00	0.30	1.43	0.00	0.00	0.00	27.50	27.91	52.0	0.537
123.25	0.47	2.39	0.00	0.00	0.00	39.42	40.10	52.0	0.772
125.00	0.47	2.42	0.00	0.00	0.00	36.78	37.48	52.0	0.721
127.00	0.34	1.91	0.00	0.00	0.00	33.48	33.98	52.0	0.654
130.00	0.34	1.95	0.00	0.00	0.00	29.70	30.23	52.0	0.581
135.00	0.33	2.03	0.00	0.00	0.00	22.04	22.64	52.0	0.436
137.00	0.22	0.89	0.00	0.00	0.00	18.45	18.74	52.0	0.360
140.00	0.22	0.90	0.00	0.00	0.00	16.67	16.95	52.0	0.326
145.00	0.21	0.92	0.00	0.00	0.00	13.01	13.32	52.0	0.256
150.00	0.21	0.94	0.00	0.00	0.00	8.35	8.72	52.0	0.168
155.00	0.00	0.95	0.00	0.00	0.00	2.28	2.82	52.0	0.054

Wind Loading - Shaft

Structure: CT00248-S-SBA
Site Name: North Bethel
Height: 155.00 (ft)
Base Elev: 0.000 (ft)

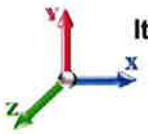
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

10/21/2015

Tower Engineering Solutions

Load Case: 73.61 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 24

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00	13.871	23.44	348.60	0.650	0.500	0.00	0.000	0.00	0.0	0.0	0.0
5.00		0.00	1.00	13.871	23.44	340.28	0.650	0.500	5.00	23.813	15.48	362.9	172.7	1302.2
10.00		0.00	1.00	13.871	23.44	331.95	0.650	0.500	5.00	23.247	15.11	354.2	168.5	1270.5
15.00		0.00	1.00	13.871	23.44	323.62	0.650	0.500	5.00	22.682	14.74	345.6	164.3	1238.8
20.00		0.00	1.00	13.871	23.44	315.30	0.650	0.500	5.00	22.116	14.38	337.0	160.1	1207.2
25.00		0.00	1.00	13.871	23.44	306.97	0.650	0.500	5.00	21.551	14.01	328.4	156.0	1175.5
30.00		0.00	1.00	13.871	23.44	298.64	0.650	0.500	5.00	20.985	13.64	319.8	151.8	1143.8
35.00		0.00	1.02	14.106	23.84	292.77	0.650	0.500	5.00	20.419	13.27	316.4	147.6	1112.1
40.00		0.00	1.06	14.655	24.77	289.85	0.650	0.500	5.00	19.854	12.91	319.6	143.4	1080.5
44.00	Bot - Section 2	0.00	1.09	15.059	25.45	286.88	0.650	0.500	4.00	15.476	10.06	256.0	112.0	841.9
45.00		0.00	1.09	15.156	25.61	286.06	0.650	0.500	1.00	3.875	2.52	64.5	28.3	390.8
49.75	Top - Section 1	0.00	1.12	15.597	26.36	281.81	0.650	0.500	4.75	18.097	11.76	310.1	130.7	1822.4
50.00		0.00	1.13	15.620	26.40	286.45	0.650	0.500	0.25	0.938	0.61	16.1	6.9	51.1
55.00		0.00	1.16	16.051	27.13	281.42	0.650	0.500	5.00	18.470	12.01	325.7	133.1	1002.9
60.00		0.00	1.19	16.455	27.81	275.87	0.650	0.500	5.00	17.904	11.64	323.6	129.0	971.2
65.00		0.00	1.21	16.836	28.45	269.87	0.650	0.500	5.00	17.338	11.27	320.7	124.8	939.6
70.00		0.00	1.24	17.196	29.06	263.47	0.650	0.500	5.00	16.773	10.90	316.8	120.6	907.9
75.00		0.00	1.26	17.538	29.64	256.72	0.650	0.500	5.00	16.207	10.53	312.2	116.4	876.2
80.00		0.00	1.29	17.865	30.19	249.64	0.650	0.500	5.00	15.642	10.17	307.0	112.2	844.5
85.00		0.00	1.31	18.177	30.72	242.28	0.650	0.500	5.00	15.076	9.80	301.0	108.0	812.9
89.50	Bot - Section 3	0.00	1.33	18.447	31.17	235.43	0.650	0.500	4.50	13.085	8.51	265.1	93.8	704.7
90.00		0.00	1.33	18.476	31.22	234.66	0.650	0.500	0.50	1.452	0.94	29.5	10.6	133.7
93.75	Top - Section 2	0.00	1.35	18.693	31.59	228.78	0.650	0.500	3.75	10.707	6.96	219.9	77.0	984.0
95.00		0.00	1.35	18.764	31.71	231.25	0.650	0.500	1.25	3.498	2.27	72.1	25.4	161.5
100.00		0.00	1.37	19.041	32.18	223.20	0.650	0.500	5.00	13.640	8.87	285.3	97.4	627.6
105.00		0.00	1.39	19.308	32.63	214.94	0.650	0.500	5.00	13.074	8.50	277.3	93.2	600.5
110.00		0.00	1.41	19.566	33.07	206.48	0.650	0.500	5.00	12.509	8.13	268.9	89.0	573.4
115.00		0.00	1.43	19.816	33.49	197.84	0.650	0.500	5.00	11.943	7.76	260.0	84.8	546.4
117.00	Appurtenance(s)	0.00	1.44	19.914	33.65	194.34	0.650	0.500	2.00	4.619	3.00	101.0	33.3	211.5
120.00	Bot - Section 4	0.00	1.45	20.059	33.90	189.04	0.650	0.500	3.00	6.759	4.39	148.9	48.4	308.8
123.25	Top - Section 3	0.00	1.46	20.213	34.16	183.23	0.650	0.500	3.25	7.194	4.68	159.7	51.4	491.2
125.00		0.00	1.46	20.294	34.30	182.85	0.650	0.500	1.75	3.774	2.45	84.1	27.2	114.7
127.00	Appurtenance(s)	0.00	1.47	20.386	34.45	179.23	0.650	0.500	2.00	4.229	2.75	94.7	30.4	128.3
130.00		0.00	1.48	20.523	34.68	173.75	0.650	0.500	3.00	6.174	4.01	139.2	44.0	186.8
135.00		0.00	1.50	20.745	35.06	164.51	0.650	0.500	5.00	9.837	6.39	224.2	69.2	296.2
137.00	Appurtenance(s)	0.00	1.50	20.833	35.21	160.77	0.650	0.500	2.00	3.776	2.45	86.4	27.0	114.0
140.00		0.00	1.51	20.962	35.43	155.13	0.650	0.500	3.00	5.495	3.57	126.5	39.0	165.3
145.00		0.00	1.53	21.173	35.78	145.62	0.650	0.500	5.00	8.706	5.66	202.5	60.8	260.4
150.00		0.00	1.54	21.379	36.13	135.99	0.650	0.500	5.00	8.140	5.29	191.2	56.6	242.4
155.00	Appurtenance(s)	0.00	1.56	21.581	36.47	126.24	0.650	0.500	5.00	7.574	4.92	179.6	52.5	224.5
								Totals:	**155.00**			**8,953.6**		**26,067.9**

Discrete Appurtenance Forces

Structure:	CT00248-S-SB	**Code:**	EIA/TIA-222-F	10/21/2015	
Site Name:	North Bethel	**Exposure:**	C		
Height:	155.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 14	

TES Tower Engineering Solutions

Load Case: 73.61 mph Wind with 0.5" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00

Iterations: 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	155.00	ALU 800MHz External Notch	3	21.675	36.632	0.72	1.90	41.40	0.000	2.400	69.63	0.00	167.11
2	155.00	1900MHz RRH	3	21.675	36.632	1.00	9.33	225.60	0.000	2.400	341.77	0.00	820.25
3	155.00	6' Lightning rod	1	21.581	36.471	0.00	0.98	11.80	0.000	0.000	35.74	0.00	0.00
4	155.00	800 MHz RRH	3	21.675	36.632	0.92	7.40	222.30	0.000	2.400	270.96	0.00	650.29
5	155.00	ACU-A20-N	4	21.675	36.632	1.00	0.88	9.20	0.000	2.400	32.24	0.00	77.37
6	155.00	TD-RRH8x20-25	3	21.675	36.632	0.69	10.29	276.00	0.000	2.400	376.86	0.00	904.47
7	155.00	APXVSPP18-C-A20	3	21.675	36.632	0.82	21.48	319.50	0.000	2.400	786.69	0.00	1888.06
8	155.00	APXVTM14-C-120	3	21.675	36.632	0.77	16.84	275.70	0.000	2.400	616.87	0.00	1480.49
9	155.00	Collar Mount	1	21.581	36.471	0.75	5.63	425.00	0.000	0.000	205.15	0.00	0.00
10	155.00	Low Profile Platform	1	21.581	36.471	1.00	27.00	1800.00	0.000	0.000	984.72	0.00	0.00
11	137.00	SBNHH-1D65B	6	20.833	35.207	0.82	43.30	522.00	0.000	0.000	1524.33	0.00	0.00
12	137.00	RRH2X60-PCS	3	20.833	35.207	0.90	7.45	212.70	0.000	0.000	262.36	0.00	0.00
13	137.00	RRH2X60-700	3	20.833	35.207	0.74	9.39	240.30	0.000	0.000	330.62	0.00	0.00
14	137.00	LPA-80080/4CF	2	20.833	35.207	0.93	13.89	0.00	0.000	0.000	489.18	0.00	0.00
15	137.00	LPA-80080-6CF-EDIN	2	20.833	35.207	0.93	20.78	138.60	0.000	0.000	731.47	0.00	0.00
16	137.00	Low Profile Platform	1	20.833	35.207	1.00	31.00	1500.00	0.000	0.000	1091.42	0.00	0.00
17	137.00	FD9R6004/2C-3L (3.1 lbs)	6	20.833	35.207	0.65	1.72	32.40	0.000	0.000	60.42	0.00	0.00
18	137.00	DB-T1-6Z-8AB-0Z	2	20.833	35.207	1.00	11.74	92.00	0.000	0.000	413.33	0.00	0.00
19	137.00	4X45 RRH AWS	3	20.833	35.207	0.83	8.04	249.30	0.000	0.000	283.16	0.00	0.00
20	137.00	LPA-80063/6CF	2	20.833	35.207	0.94	20.34	0.00	0.000	0.000	716.17	0.00	0.00
21	127.00	LGP21401	6	20.386	34.453	0.66	5.62	127.20	0.000	0.000	193.74	0.00	0.00
22	127.00	7770.00	3	20.386	34.453	0.75	14.06	0.00	0.000	0.000	484.49	0.00	0.00
23	127.00	DC6-48-60-18-8F	1	20.386	34.453	1.00	2.77	49.50	0.000	0.000	95.43	0.00	0.00
24	127.00	P65-16-XL-2	3	20.386	34.453	0.75	19.96	232.50	0.000	0.000	687.59	0.00	0.00
25	127.00	Low Profile Platform	1	20.386	34.453	1.00	27.00	1800.00	0.000	0.000	930.23	0.00	0.00
26	127.00	RRUS-11	6	20.386	34.453	0.69	19.33	484.20	0.000	0.000	666.11	0.00	0.00
27	117.00	T-Arms	3	19.914	33.655	0.75	23.63	1260.00	0.000	0.000	795.10	0.00	0.00
28	117.00	AIR 21, 1.3M, B4A B2P	3	19.914	33.655	0.83	17.36	384.30	0.000	0.000	584.09	0.00	0.00
29	117.00	AIR 21, 1.3M, B2A B4P	3	19.914	33.655	0.83	17.36	387.60	0.000	0.000	584.09	0.00	0.00
						Totals:		**11,319.10**			**14,643.95**		

Total Applied Force Summary

Structure:	CT00248-S-SB	**Code:**	EIA/TIA-222-F	10/21/2015	
Site Name:	North Bethel	**Exposure:**	C		
Height:	155.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 15	

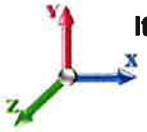
Tower Engineering Solutions

Load Case: 73.61 mph Wind with 0.5" Ice

Iterations: 24

Dead Load Factor 1.00

Wind Load Factor 1.00



Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		430.83	1491.64	0.00	0.00
10.00		422.22	1459.96	0.00	0.00
15.00		413.60	1428.29	0.00	0.00
20.00		404.98	1396.61	0.00	0.00
25.00		396.36	1364.93	0.00	0.00
30.00		387.74	1333.26	0.00	0.00
35.00		385.55	1301.58	0.00	0.00
40.00		391.44	1269.90	0.00	0.00
44.00		315.06	993.45	0.00	0.00
45.00		79.37	428.66	0.00	0.00
49.75		382.69	2002.33	0.00	0.00
50.00		19.93	60.55	0.00	0.00
55.00		404.32	1192.38	0.00	0.00
60.00		404.27	1160.70	0.00	0.00
65.00		403.17	1129.02	0.00	0.00
70.00		401.11	1097.35	0.00	0.00
75.00		398.20	1065.67	0.00	0.00
80.00		394.51	1033.99	0.00	0.00
85.00		390.11	1002.32	0.00	0.00
89.50		346.51	875.19	0.00	0.00
90.00		38.52	152.60	0.00	0.00
93.75		288.57	1126.06	0.00	0.00
95.00		95.10	208.90	0.00	0.00
100.00		378.61	817.09	0.00	0.00
105.00		371.93	789.99	0.00	0.00
110.00		364.75	762.90	0.00	0.00
115.00		357.10	735.80	0.00	0.00
117.00	(9) appurtenances	2103.36	2319.14	0.00	0.00
120.00		148.92	374.92	0.00	0.00
123.25		159.72	562.83	0.00	0.00
125.00		84.14	153.24	0.00	0.00
127.00	(20) appurtenances	3152.30	2865.80	0.00	0.00
130.00		139.18	232.56	0.00	0.00
135.00		224.17	372.42	0.00	0.00
137.00	(30) appurtenances	5988.87	3131.75	0.00	0.00
140.00		126.53	173.25	0.00	0.00
145.00		202.48	273.56	0.00	0.00
150.00		191.17	255.63	0.00	0.00
155.00	(25) appurtenances	3900.19	3844.19	0.00	5988.04
	Totals:	**25,487.56**	**42,240.40**	**0.00**	**5,988.04**

Resulting Forces and Deflections

Structure: CT00248-S-SB
Site Name: North Bethel
Height: 155.00 (ft)
Base Elev: 0.000 (ft)

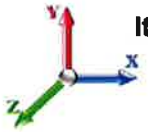
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

10/21/2015

Tower Engineering Solutions

Load Case: 73.61 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 24

Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	Deflect X (in)	Deflect Z (in)	Deflect Resultant (in)	Rotation Sway (deg)	Rotation Twist (deg)
0.00	-25.543	-42.206	0.000	0.000	0.000	-2898.3	0.000	0.000	0.000	0.000	0.000
5.00	-25.218	-40.649	0.000	0.000	0.000	-2770.6	-0.080	0.000	0.080	-0.149	0.000
10.00	-24.896	-39.123	0.000	0.000	0.000	-2644.5	-0.319	0.000	0.319	-0.302	0.000
15.00	-24.578	-37.629	0.000	0.000	0.000	-2520.1	-0.720	0.000	0.720	-0.460	0.000
20.00	-24.263	-36.167	0.000	0.000	0.000	-2397.2	-1.288	0.000	1.288	-0.621	0.000
25.00	-23.952	-34.737	0.000	0.000	0.000	-2275.9	-2.028	0.000	2.028	-0.788	0.000
30.00	-23.645	-33.338	0.000	0.000	0.000	-2156.1	-2.945	0.000	2.945	-0.959	0.000
35.00	-23.336	-31.971	0.000	0.000	0.000	-2037.9	-4.044	0.000	4.044	-1.135	0.000
40.00	-23.006	-30.644	0.000	0.000	0.000	-1921.2	-5.329	0.000	5.329	-1.316	0.000
44.00	-22.715	-29.621	0.000	0.000	0.000	-1829.2	-6.496	0.000	6.496	-1.465	0.000
45.00	-22.681	-29.151	0.000	0.000	0.000	-1806.5	-6.808	0.000	6.808	-1.504	0.000
49.75	-22.288	-27.123	0.000	0.000	0.000	-1698.7	-8.397	0.000	8.397	-1.686	0.000
50.00	-22.313	-27.025	0.000	0.000	0.000	-1693.2	-8.486	0.000	8.486	-1.696	0.000
55.00	-21.957	-25.773	0.000	0.000	0.000	-1581.6	-10.362	0.000	10.362	-1.883	0.000
60.00	-21.596	-24.554	0.000	0.000	0.000	-1471.8	-12.437	0.000	12.437	-2.074	0.000
65.00	-21.231	-23.368	0.000	0.000	0.000	-1363.8	-14.714	0.000	14.714	-2.270	0.000
70.00	-20.864	-22.215	0.000	0.000	0.000	-1257.7	-17.199	0.000	17.199	-2.470	0.000
75.00	-20.494	-21.094	0.000	0.000	0.000	-1153.4	-19.895	0.000	19.895	-2.675	0.000
80.00	-20.124	-20.007	0.000	0.000	0.000	-1050.9	-22.808	0.000	22.808	-2.883	0.000
85.00	-19.749	-18.956	0.000	0.000	0.000	-950.33	-25.940	0.000	25.940	-3.095	0.000
89.50	-19.388	-18.066	0.000	0.000	0.000	-861.47	-28.951	0.000	28.951	-3.289	0.000
90.00	-19.370	-17.884	0.000	0.000	0.000	-851.77	-29.296	0.000	29.296	-3.312	0.000
93.75	-19.047	-16.740	0.000	0.000	0.000	-779.13	-31.963	0.000	31.963	-3.476	0.000
95.00	-18.984	-16.487	0.000	0.000	0.000	-755.33	-32.880	0.000	32.880	-3.533	0.000
100.00	-18.620	-15.617	0.000	0.000	0.000	-660.41	-36.710	0.000	36.710	-3.776	0.000
105.00	-18.256	-14.779	0.000	0.000	0.000	-567.31	-40.792	0.000	40.792	-4.016	0.000
110.00	-17.893	-13.973	0.000	0.000	0.000	-476.03	-45.122	0.000	45.122	-4.249	0.000
115.00	-17.517	-13.220	0.000	0.000	0.000	-386.57	-49.690	0.000	49.690	-4.471	0.000
117.00	-15.258	-11.046	0.000	0.000	0.000	-351.53	-51.581	0.000	51.581	-4.560	0.000
120.00	-15.103	-10.650	0.000	0.000	0.000	-305.76	-54.484	0.000	54.484	-4.685	0.000
123.25	-14.914	-10.078	0.000	0.000	0.000	-256.68	-57.716	0.000	57.716	-4.813	0.000
125.00	-14.833	-9.909	0.000	0.000	0.000	-230.58	-59.491	0.000	59.491	-4.879	0.000
127.00	-11.462	-7.298	0.000	0.000	0.000	-200.91	-61.558	0.000	61.558	-4.991	0.000
130.00	-11.326	-7.042	0.000	0.000	0.000	-166.53	-64.741	0.000	64.741	-5.144	0.000
135.00	-11.085	-6.665	0.000	0.000	0.000	-109.90	-70.242	0.000	70.242	-5.356	0.000
137.00	-4.834	-4.104	0.000	0.000	0.000	-87.731	-72.499	0.000	72.499	-5.428	0.000
140.00	-4.700	-3.934	0.000	0.000	0.000	-73.229	-75.937	0.000	75.937	-5.524	0.000
145.00	-4.480	-3.672	0.000	0.000	0.000	-49.730	-81.790	0.000	81.790	-5.662	0.000
150.00	-4.269	-3.430	0.000	0.000	0.000	-27.332	-87.772	0.000	87.772	-5.768	0.000
155.00	-3.900	0.000	0.000	0.000	0.000	-5.988	0.000	0.000	93.839	-5.825	0.000

Resulting Stresses

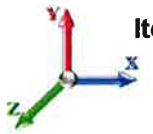
Structure:	CT00248-S-SBA	**Code:**	EIA/TIA-222-F	10/21/2015
Site Name:	North Bethel	**Exposure:**	C	
Height:	155.00 (ft)	**Gh:**	1.69	
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 17

Tower Engineering Solutions

Load Case: 73.61 mph Wind with 0.5" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 24

	Applied Stresses								
Elev (ft)	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvt Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	fb Combined (ksi)	Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.63	0.77	0.00	0.00	0.00	37.09	37.74	51.6	0.732
5.00	0.62	0.78	0.00	0.00	0.00	37.23	37.87	52.0	0.729
10.00	0.61	0.78	0.00	0.00	0.00	37.36	38.00	52.0	0.731
15.00	0.60	0.79	0.00	0.00	0.00	37.48	38.11	52.0	0.733
20.00	0.60	0.81	0.00	0.00	0.00	37.58	38.20	52.0	0.735
25.00	0.59	0.82	0.00	0.00	0.00	37.66	38.28	52.0	0.736
30.00	0.58	0.83	0.00	0.00	0.00	37.72	38.33	52.0	0.737
35.00	0.57	0.84	0.00	0.00	0.00	37.75	38.35	52.0	0.738
40.00	0.56	0.85	0.00	0.00	0.00	37.75	38.34	52.0	0.738
44.00	0.56	0.86	0.00	0.00	0.00	37.72	38.31	52.0	0.737
45.00	0.55	0.87	0.00	0.00	0.00	37.72	38.30	52.0	0.737
49.75	0.52	0.86	0.00	0.00	0.00	36.35	36.90	52.0	0.710
50.00	0.52	0.87	0.00	0.00	0.00	36.35	36.90	52.0	0.710
55.00	0.51	0.88	0.00	0.00	0.00	36.18	36.72	52.0	0.706
60.00	0.50	0.89	0.00	0.00	0.00	35.95	36.48	52.0	0.702
65.00	0.50	0.91	0.00	0.00	0.00	35.65	36.18	52.0	0.696
70.00	0.49	0.92	0.00	0.00	0.00	35.26	35.79	52.0	0.688
75.00	0.48	0.94	0.00	0.00	0.00	34.78	35.30	52.0	0.679
80.00	0.47	0.96	0.00	0.00	0.00	34.17	34.68	52.0	0.667
85.00	0.47	0.98	0.00	0.00	0.00	33.42	33.93	52.0	0.653
89.50	0.46	1.00	0.00	0.00	0.00	32.60	33.11	52.0	0.637
90.00	0.46	1.00	0.00	0.00	0.00	32.50	33.01	52.0	0.635
93.75	0.52	1.19	0.00	0.00	0.00	36.34	36.92	52.0	0.710
95.00	0.52	1.20	0.00	0.00	0.00	35.98	36.56	52.0	0.703
100.00	0.51	1.23	0.00	0.00	0.00	34.32	34.89	52.0	0.671
105.00	0.51	1.26	0.00	0.00	0.00	32.28	32.86	52.0	0.632
110.00	0.50	1.30	0.00	0.00	0.00	29.79	30.37	52.0	0.584
115.00	0.50	1.33	0.00	0.00	0.00	26.73	27.33	52.0	0.526
117.00	0.43	1.19	0.00	0.00	0.00	25.33	25.84	52.0	0.497
120.00	0.42	1.21	0.00	0.00	0.00	23.48	24.00	52.0	0.462
123.25	0.68	2.03	0.00	0.00	0.00	33.71	34.57	52.0	0.665
125.00	0.68	2.05	0.00	0.00	0.00	31.48	32.35	52.0	0.622
127.00	0.51	1.62	0.00	0.00	0.00	28.69	29.34	52.0	0.564
130.00	0.51	1.66	0.00	0.00	0.00	25.49	26.17	52.0	0.503
135.00	0.52	1.73	0.00	0.00	0.00	19.00	19.74	52.0	0.380
137.00	0.33	0.77	0.00	0.00	0.00	15.96	16.34	52.0	0.314
140.00	0.32	0.78	0.00	0.00	0.00	14.41	14.80	52.0	0.285
145.00	0.32	0.80	0.00	0.00	0.00	11.24	11.65	52.0	0.224
150.00	0.33	0.82	0.00	0.00	0.00	7.17	7.63	52.0	0.147
155.00	0.00	0.81	0.00	0.00	0.00	1.84	2.32	52.0	0.045

Wind Loading - Shaft

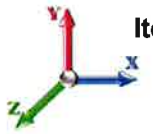
Structure: CT00248-S-SBA
Site Name: North Bethel
Height: 155.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

10/21/2015
Page: 18

Tower Engineering Solutions

Load Case: 50 mph Wind with 0" Ice
Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00	6.400	10.82	236.79	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		0.00	1.00	6.400	10.82	231.14	0.650	0.000	5.00	23.396	15.21	164.5	0.0	1129.5
10.00		0.00	1.00	6.400	10.82	225.48	0.650	0.000	5.00	22.831	14.84	160.5	0.0	1102.0
15.00		0.00	1.00	6.400	10.82	219.82	0.650	0.000	5.00	22.265	14.47	156.5	0.0	1074.5
20.00		0.00	1.00	6.400	10.82	214.17	0.650	0.000	5.00	21.700	14.10	152.6	0.0	1047.0
25.00		0.00	1.00	6.400	10.82	208.51	0.650	0.000	5.00	21.134	13.74	148.6	0.0	1019.5
30.00		0.00	1.00	6.400	10.82	202.86	0.650	0.000	5.00	20.568	13.37	144.6	0.0	992.0
35.00		0.00	1.02	6.509	11.00	198.86	0.650	0.000	5.00	20.003	13.00	143.0	0.0	964.5
40.00		0.00	1.06	6.762	11.43	196.88	0.650	0.000	5.00	19.437	12.63	144.4	0.0	937.1
44.00	Bot - Section 2	0.00	1.09	6.948	11.74	194.87	0.650	0.000	4.00	15.143	9.84	115.6	0.0	729.9
45.00		0.00	1.09	6.993	11.82	194.31	0.650	0.000	1.00	3.792	2.46	29.1	0.0	362.5
49.75	Top - Section 1	0.00	1.12	7.196	12.16	191.42	0.650	0.000	4.75	17.701	11.51	139.9	0.0	1691.7
50.00		0.00	1.13	7.207	12.18	194.57	0.650	0.000	0.25	0.917	0.60	7.3	0.0	44.2
55.00		0.00	1.16	7.406	12.52	191.15	0.650	0.000	5.00	18.053	11.73	146.9	0.0	869.8
60.00		0.00	1.19	7.592	12.83	187.39	0.650	0.000	5.00	17.487	11.37	145.8	0.0	842.3
65.00		0.00	1.21	7.768	13.13	183.31	0.650	0.000	5.00	16.922	11.00	144.4	0.0	814.8
70.00		0.00	1.24	7.934	13.41	178.96	0.650	0.000	5.00	16.356	10.63	142.6	0.0	787.3
75.00		0.00	1.26	8.092	13.68	174.38	0.650	0.000	5.00	15.791	10.26	140.4	0.0	759.8
80.00		0.00	1.29	8.242	13.93	169.57	0.650	0.000	5.00	15.225	9.90	137.9	0.0	732.3
85.00		0.00	1.31	8.387	14.17	164.57	0.650	0.000	5.00	14.659	9.53	135.1	0.0	704.9
89.50	Bot - Section 3	0.00	1.33	8.511	14.38	159.92	0.650	0.000	4.50	12.710	8.26	118.8	0.0	610.9
90.00		0.00	1.33	8.525	14.41	159.39	0.650	0.000	0.50	1.410	0.92	13.2	0.0	123.1
93.75	Top - Section 2	0.00	1.35	8.625	14.58	155.40	0.650	0.000	3.75	10.395	6.76	98.5	0.0	907.0
95.00		0.00	1.35	8.657	14.63	157.08	0.650	0.000	1.25	3.394	2.21	32.3	0.0	136.1
100.00		0.00	1.37	8.785	14.85	151.61	0.650	0.000	5.00	13.223	8.59	127.6	0.0	530.3
105.00		0.00	1.39	8.908	15.06	146.00	0.650	0.000	5.00	12.657	8.23	123.9	0.0	507.4
110.00		0.00	1.41	9.028	15.26	140.25	0.650	0.000	5.00	12.092	7.86	119.9	0.0	484.4
115.00		0.00	1.43	9.143	15.45	134.39	0.650	0.000	5.00	11.526	7.49	115.8	0.0	461.5
117.00	Appurtenance(s)	0.00	1.44	9.188	15.53	132.01	0.650	0.000	2.00	4.452	2.89	44.9	0.0	178.2
120.00	Bot - Section 4	0.00	1.45	9.255	15.64	128.40	0.650	0.000	3.00	6.509	4.23	66.2	0.0	260.4
123.25	Top - Section 3	0.00	1.46	9.326	15.76	124.46	0.650	0.000	3.25	6.923	4.50	70.9	0.0	439.8
125.00		0.00	1.46	9.363	15.82	124.20	0.650	0.000	1.75	3.629	2.36	37.3	0.0	87.5
127.00	Appurtenance(s)	0.00	1.47	9.406	15.90	121.74	0.650	0.000	2.00	4.062	2.64	42.0	0.0	98.0
130.00		0.00	1.48	9.469	16.00	118.02	0.650	0.000	3.00	5.924	3.85	61.6	0.0	142.8
135.00		0.00	1.50	9.572	16.18	111.74	0.650	0.000	5.00	9.420	6.12	99.0	0.0	227.0
137.00	Appurtenance(s)	0.00	1.50	9.612	16.24	109.21	0.650	0.000	2.00	3.610	2.35	38.1	0.0	87.0
140.00		0.00	1.51	9.672	16.35	105.37	0.650	0.000	3.00	5.245	3.41	55.7	0.0	126.3
145.00		0.00	1.53	9.769	16.51	98.91	0.650	0.000	5.00	8.289	5.39	89.0	0.0	199.5
150.00		0.00	1.54	9.864	16.67	92.37	0.650	0.000	5.00	7.723	5.02	83.7	0.0	185.8
155.00	Appurtenance(s)	0.00	1.56	9.957	16.83	85.75	0.650	0.000	5.00	7.158	4.65	78.3	0.0	172.0
								Totals:	**155.00**			**4,016.2**		**22,570.6**

Discrete Appurtenance Forces

Structure: CT00248-S-SB
Site Name: North Bethel
Height: 155.00 (ft)
Base Elev: 0.000 (ft)

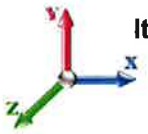
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

10/21/2015

Tower Engineering Solutions

Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	155.00	ALU 800MHz External Notch	3	10.001	16.901	0.69	1.61	26.40	0.000	2.400	27.29	0.00	65.49
2	155.00	1900MHz RRH	3	10.001	16.901	1.00	8.73	132.00	0.000	2.400	147.55	0.00	354.12
3	155.00	6' Lightning rod	1	9.957	16.827	0.00	0.38	6.50	0.000	0.000	6.39	0.00	0.00
4	155.00	800 MHz RRH	3	10.001	16.901	0.92	6.87	159.00	0.000	2.400	116.15	0.00	278.77
5	155.00	ACU-A20-N	4	10.001	16.901	1.00	0.32	4.00	0.000	2.400	5.41	0.00	12.98
6	155.00	TD-RRH8x20-25	3	10.001	16.901	0.68	9.63	210.00	0.000	2.400	162.74	0.00	390.58
7	155.00	APXVSPP18-C-A20	3	10.001	16.901	0.82	20.32	171.00	0.000	2.400	343.43	0.00	824.23
8	155.00	APXVTM14-C-120	3	10.001	16.901	0.76	15.73	168.00	0.000	2.400	265.89	0.00	638.14
9	155.00	Collar Mount	1	9.957	16.827	0.75	3.75	250.00	0.000	0.000	63.10	0.00	0.00
10	155.00	Low Profile Platform	1	9.957	16.827	1.00	22.00	1500.00	0.000	0.000	370.20	0.00	0.00
11	137.00	SBNHH-1D65B	6	9.612	16.244	0.82	40.98	304.26	0.000	0.000	665.74	0.00	0.00
12	137.00	RRH2X60-PCS	3	9.612	16.244	0.89	6.86	165.00	0.000	0.000	111.47	0.00	0.00
13	137.00	RRH2X60-700	3	9.612	16.244	0.73	8.67	180.00	0.000	0.000	140.88	0.00	0.00
14	137.00	LPA-80080/4CF ___	2	9.612	16.244	0.93	13.22	24.00	0.000	0.000	214.82	0.00	0.00
15	137.00	LPA-80080-6CF-EDIN	2	9.612	16.244	0.93	19.86	42.00	0.000	0.000	322.69	0.00	0.00
16	137.00	Low Profile Platform	1	9.612	16.244	1.00	22.00	1200.00	0.000	0.000	357.37	0.00	0.00
17	137.00	FD9R6004/2C-3L (3.1 lbs)	6	9.612	16.244	0.62	1.34	18.60	0.000	0.000	21.75	0.00	0.00
18	137.00	DB-T1-6Z-8AB-0Z	2	9.612	16.244	1.00	11.20	88.00	0.000	0.000	181.93	0.00	0.00
19	137.00	4X45 RRH AWS	3	9.612	16.244	0.82	7.40	186.00	0.000	0.000	120.28	0.00	0.00
20	137.00	LPA-80063/6CF	2	9.612	16.244	0.94	19.44	54.00	0.000	0.000	315.77	0.00	0.00
21	127.00	LGP21401	6	9.406	15.896	0.64	4.95	84.60	0.000	0.000	78.74	0.00	0.00
22	127.00	7770.00	3	9.406	15.896	0.75	13.23	105.00	0.000	0.000	210.31	0.00	0.00
23	127.00	DC6-48-60-18-8F	1	9.406	15.896	1.00	2.57	31.80	0.000	0.000	40.85	0.00	0.00
24	127.00	P65-16-XL-2	3	9.406	15.896	0.75	18.90	99.00	0.000	0.000	300.44	0.00	0.00
25	127.00	Low Profile Platform	1	9.406	15.896	1.00	22.00	1500.00	0.000	0.000	349.72	0.00	0.00
26	127.00	RRUS-11	6	9.406	15.896	0.68	18.03	330.00	0.000	0.000	286.67	0.00	0.00
27	117.00	T-Arms	3	9.188	15.528	0.75	18.00	1050.00	0.000	0.000	279.50	0.00	0.00
28	117.00	AIR 21, 1.3M, B4A B2P	3	9.188	15.528	0.83	16.38	271.20	0.000	0.000	254.41	0.00	0.00
29	117.00	AIR 21, 1.3M, B2A B4P	3	9.188	15.528	0.83	16.38	274.50	0.000	0.000	254.41	0.00	0.00
						Totals:		**8,634.86**			**6,015.92**		

Total Applied Force Summary

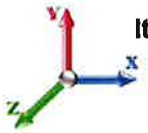
Structure:	CT00248-S-SB	**Code:**	EIA/TIA-222-F	10/21/2015	
Site Name:	North Bethel	**Exposure:**	C		
Height:	155.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations: 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		190.99	1307.57	0.00	0.00
10.00		187.01	1280.08	0.00	0.00
15.00		183.03	1252.60	0.00	0.00
20.00		179.06	1225.11	0.00	0.00
25.00		175.08	1197.62	0.00	0.00
30.00		171.10	1170.13	0.00	0.00
35.00		169.96	1142.65	0.00	0.00
40.00		172.37	1115.16	0.00	0.00
44.00		138.59	872.34	0.00	0.00
45.00		34.92	398.09	0.00	0.00
49.75		168.24	1860.89	0.00	0.00
50.00		8.76	53.12	0.00	0.00
55.00		177.53	1047.88	0.00	0.00
60.00		177.28	1020.39	0.00	0.00
65.00		176.55	992.91	0.00	0.00
70.00		175.40	965.42	0.00	0.00
75.00		173.87	937.93	0.00	0.00
80.00		171.98	910.44	0.00	0.00
85.00		169.78	882.96	0.00	0.00
89.50		150.55	771.16	0.00	0.00
90.00		16.73	140.89	0.00	0.00
93.75		125.26	1040.59	0.00	0.00
95.00		41.24	180.67	0.00	0.00
100.00		163.98	708.36	0.00	0.00
105.00		160.75	685.45	0.00	0.00
110.00		157.29	662.55	0.00	0.00
115.00		153.62	639.64	0.00	0.00
117.00	(9) appurtenances	848.49	1845.14	0.00	0.00
120.00		66.17	326.55	0.00	0.00
123.25		70.92	511.45	0.00	0.00
125.00		37.32	126.08	0.00	0.00
127.00	(20) appurtenances	1308.69	2292.43	0.00	0.00
130.00		61.62	188.52	0.00	0.00
135.00		99.05	303.21	0.00	0.00
137.00	(30) appurtenances	2490.82	2379.30	0.00	0.00
140.00		55.72	134.23	0.00	0.00
145.00		88.95	212.72	0.00	0.00
150.00		83.69	198.98	0.00	0.00
155.00	(25) appurtenances	1586.45	2812.14	0.00	2564.30
	Totals:	**10,768.80**	**35,793.35**	**0.00**	**2,564.30**

Resulting Forces and Deflections

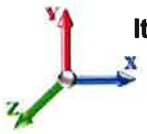
Structure: CT00248-S-SB
Site Name: North Bethel
Height: 155.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

10/21/2015

Tower Engineering Solutions

Load Case: 50 mph Wind with 0" Ice
Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 23

Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	Deflect X (in)	Deflect Z (in)	Deflect Resultant (in)	Rotation Sway (deg)	Rotation Twist (deg)
0.00	-10.787	-35.787	0.000	0.000	0.000	-1202.4	0.000	0.000	0.000	0.000	0.000
5.00	-10.633	-34.468	0.000	0.000	0.000	-1148.5	-0.033	0.000	0.033	-0.062	0.000
10.00	-10.482	-33.177	0.000	0.000	0.000	-1095.3	-0.132	0.000	0.132	-0.125	0.000
15.00	-10.332	-31.913	0.000	0.000	0.000	-1042.9	-0.298	0.000	0.298	-0.190	0.000
20.00	-10.184	-30.676	0.000	0.000	0.000	-991.30	-0.534	0.000	0.534	-0.257	0.000
25.00	-10.039	-29.467	0.000	0.000	0.000	-940.38	-0.840	0.000	0.840	-0.326	0.000
30.00	-9.896	-28.286	0.000	0.000	0.000	-890.18	-1.220	0.000	1.220	-0.397	0.000
35.00	-9.752	-27.132	0.000	0.000	0.000	-840.70	-1.675	0.000	1.675	-0.469	0.000
40.00	-9.601	-26.007	0.000	0.000	0.000	-791.94	-2.206	0.000	2.206	-0.544	0.000
44.00	-9.471	-25.130	0.000	0.000	0.000	-753.54	-2.689	0.000	2.689	-0.606	0.000
45.00	-9.451	-24.725	0.000	0.000	0.000	-744.07	-2.817	0.000	2.817	-0.622	0.000
49.75	-9.277	-22.860	0.000	0.000	0.000	-699.18	-3.474	0.000	3.474	-0.697	0.000
50.00	-9.284	-22.800	0.000	0.000	0.000	-696.86	-3.511	0.000	3.511	-0.701	0.000
55.00	-9.122	-21.742	0.000	0.000	0.000	-650.44	-4.286	0.000	4.286	-0.778	0.000
60.00	-8.959	-20.712	0.000	0.000	0.000	-604.83	-5.143	0.000	5.143	-0.856	0.000
65.00	-8.795	-19.709	0.000	0.000	0.000	-560.03	-6.083	0.000	6.083	-0.937	0.000
70.00	-8.631	-18.735	0.000	0.000	0.000	-516.05	-7.108	0.000	7.108	-1.019	0.000
75.00	-8.466	-17.788	0.000	0.000	0.000	-472.90	-8.220	0.000	8.220	-1.103	0.000
80.00	-8.301	-16.868	0.000	0.000	0.000	-430.57	-9.421	0.000	9.421	-1.188	0.000
85.00	-8.135	-15.977	0.000	0.000	0.000	-389.07	-10.712	0.000	10.712	-1.275	0.000
89.50	-7.979	-15.204	0.000	0.000	0.000	-352.46	-11.952	0.000	11.952	-1.354	0.000
90.00	-7.969	-15.058	0.000	0.000	0.000	-348.47	-12.095	0.000	12.095	-1.364	0.000
93.75	-7.829	-14.015	0.000	0.000	0.000	-318.59	-13.193	0.000	13.193	-1.431	0.000
95.00	-7.799	-13.827	0.000	0.000	0.000	-308.80	-13.571	0.000	13.571	-1.454	0.000
100.00	-7.639	-13.110	0.000	0.000	0.000	-269.81	-15.148	0.000	15.148	-1.553	0.000
105.00	-7.480	-12.416	0.000	0.000	0.000	-231.62	-16.828	0.000	16.828	-1.651	0.000
110.00	-7.322	-11.747	0.000	0.000	0.000	-194.22	-18.609	0.000	18.609	-1.747	0.000
115.00	-7.161	-11.105	0.000	0.000	0.000	-157.61	-20.488	0.000	20.488	-1.837	0.000
117.00	-6.260	-9.283	0.000	0.000	0.000	-143.29	-21.265	0.000	21.265	-1.873	0.000
120.00	-6.191	-8.953	0.000	0.000	0.000	-124.51	-22.459	0.000	22.459	-1.924	0.000
123.25	-6.109	-8.440	0.000	0.000	0.000	-104.38	-23.787	0.000	23.787	-1.976	0.000
125.00	-6.072	-8.312	0.000	0.000	0.000	-93.699	-24.517	0.000	24.517	-2.003	0.000
127.00	-4.689	-6.063	0.000	0.000	0.000	-81.554	-25.366	0.000	25.366	-2.049	0.000
130.00	-4.629	-5.870	0.000	0.000	0.000	-67.487	-26.674	0.000	26.674	-2.111	0.000
135.00	-4.524	-5.567	0.000	0.000	0.000	-44.345	-28.933	0.000	28.933	-2.196	0.000
137.00	-1.945	-3.284	0.000	0.000	0.000	-35.297	-29.860	0.000	29.860	-2.226	0.000
140.00	-1.887	-3.151	0.000	0.000	0.000	-29.463	-31.271	0.000	31.271	-2.264	0.000
145.00	-1.792	-2.940	0.000	0.000	0.000	-20.031	-33.673	0.000	33.673	-2.320	0.000
150.00	-1.702	-2.744	0.000	0.000	0.000	-11.072	-36.126	0.000	36.126	-2.362	0.000
155.00	-1.586	0.000	0.000	0.000	0.000	-2.564	0.000	0.000	38.615	-2.386	0.000

Resulting Stresses

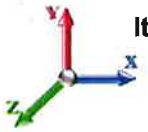
Structure: CT00248-S-SBA
Site Name: North Bethel
Height: 155.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

10/21/2015

Tower Engineering Solutions

Load Case: 50 mph Wind with 0" Ice
Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 23

Applied Stresses

Elev (ft)	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvt Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	fb Combined (ksi)	Fb Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.53	0.32	0.00	0.00	0.00	15.39	15.93	51.6	0.309
5.00	0.53	0.33	0.00	0.00	0.00	15.43	15.97	52.0	0.307
10.00	0.52	0.33	0.00	0.00	0.00	15.47	16.00	52.0	0.308
15.00	0.51	0.33	0.00	0.00	0.00	15.51	16.03	52.0	0.308
20.00	0.51	0.34	0.00	0.00	0.00	15.54	16.06	52.0	0.309
25.00	0.50	0.34	0.00	0.00	0.00	15.56	16.07	52.0	0.309
30.00	0.49	0.35	0.00	0.00	0.00	15.57	16.08	52.0	0.309
35.00	0.49	0.35	0.00	0.00	0.00	15.57	16.07	52.0	0.309
40.00	0.48	0.36	0.00	0.00	0.00	15.56	16.05	52.0	0.309
44.00	0.47	0.36	0.00	0.00	0.00	15.54	16.03	52.0	0.308
45.00	0.47	0.36	0.00	0.00	0.00	15.53	16.02	52.0	0.308
49.75	0.44	0.36	0.00	0.00	0.00	14.96	15.41	52.0	0.297
50.00	0.44	0.36	0.00	0.00	0.00	14.96	15.41	52.0	0.296
55.00	0.43	0.37	0.00	0.00	0.00	14.88	15.32	52.0	0.295
60.00	0.43	0.37	0.00	0.00	0.00	14.77	15.21	52.0	0.293
65.00	0.42	0.38	0.00	0.00	0.00	14.64	15.07	52.0	0.290
70.00	0.41	0.38	0.00	0.00	0.00	14.47	14.89	52.0	0.287
75.00	0.41	0.39	0.00	0.00	0.00	14.26	14.68	52.0	0.282
80.00	0.40	0.40	0.00	0.00	0.00	14.00	14.42	52.0	0.277
85.00	0.39	0.40	0.00	0.00	0.00	13.68	14.09	52.0	0.271
89.50	0.39	0.41	0.00	0.00	0.00	13.34	13.74	52.0	0.264
90.00	0.39	0.41	0.00	0.00	0.00	13.30	13.70	52.0	0.264
93.75	0.44	0.49	0.00	0.00	0.00	14.86	15.32	52.0	0.295
95.00	0.43	0.49	0.00	0.00	0.00	14.71	15.17	52.0	0.292
100.00	0.43	0.50	0.00	0.00	0.00	14.02	14.48	52.0	0.278
105.00	0.43	0.52	0.00	0.00	0.00	13.18	13.63	52.0	0.262
110.00	0.42	0.53	0.00	0.00	0.00	12.15	12.61	52.0	0.243
115.00	0.42	0.55	0.00	0.00	0.00	10.90	11.36	52.0	0.218
117.00	0.36	0.49	0.00	0.00	0.00	10.33	10.72	52.0	0.206
120.00	0.36	0.50	0.00	0.00	0.00	9.56	9.96	52.0	0.192
123.25	0.57	0.83	0.00	0.00	0.00	13.71	14.35	52.0	0.276
125.00	0.57	0.84	0.00	0.00	0.00	12.79	13.44	52.0	0.259
127.00	0.43	0.66	0.00	0.00	0.00	11.65	12.13	52.0	0.233
130.00	0.43	0.68	0.00	0.00	0.00	10.33	10.82	52.0	0.208
135.00	0.43	0.70	0.00	0.00	0.00	7.67	8.19	52.0	0.158
137.00	0.26	0.31	0.00	0.00	0.00	6.42	6.70	52.0	0.129
140.00	0.26	0.31	0.00	0.00	0.00	5.80	6.08	52.0	0.117
145.00	0.26	0.32	0.00	0.00	0.00	4.53	4.82	52.0	0.093
150.00	0.26	0.33	0.00	0.00	0.00	2.90	3.22	52.0	0.062
155.00	0.00	0.33	0.00	0.00	0.00	0.79	0.97	52.0	0.019

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	t MZ (ft-kips)
85 mph Wind with 0" Ice	31.2	0.00	35.74	0.00	0.00	3470.13
73.61 mph Wind with 0.5" Ice	25.5	0.00	42.21	0.00	0.00	2898.39
50 mph Wind with 0" Ice	10.8	0.00	35.79	0.00	0.00	1202.47

Max Stresses

Load Case	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvt Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	Combined Stress (ksi)	Allowable Stress (ksi)	Elev (ft)	Stress Ratio
85 mph Wind with 0" Ice	0.48	1.00	0.00	0.00	0.00	44.92	45.43	52.0	30.00	0.874
73.61 mph Wind with 0.5" Ice	0.57	0.84	0.00	0.00	0.00	37.75	38.35	52.0	35.00	0.738
50 mph Wind with 0" Ice	0.50	0.34	0.00	0.00	0.00	15.56	16.07	52.0	25.00	0.309

Monopole Mat Foundation Design

				Date
				10/21/2015
	Customer Name:	Verizon	EIA/TIA Standard:	EIA-222-F
	Site Name:		Structure Height (Ft.):	155
	Site Number:	CT00248-S-SBA	Engineer Name:	S. Hesselbein
	Engr. Number:	18199	Engineer Login ID:	TES

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

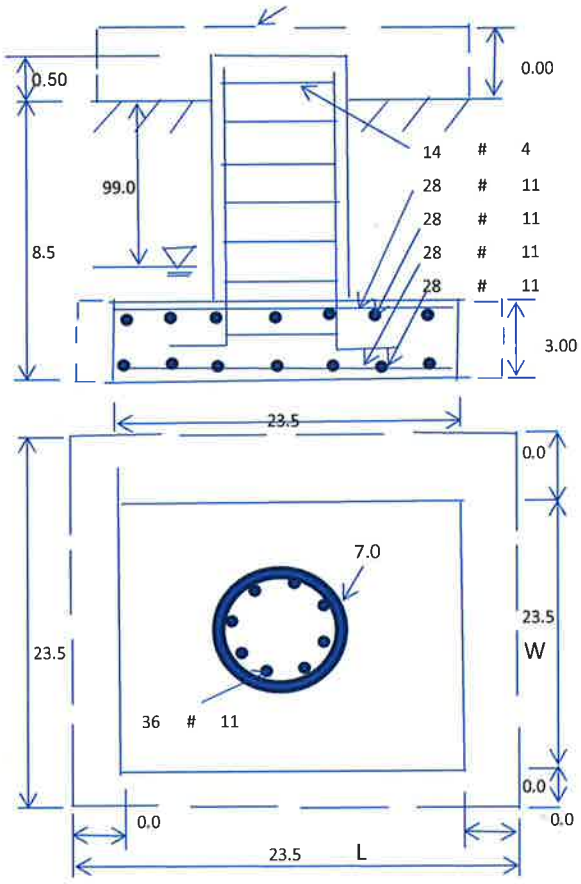
Analysis or Design? Analysis

Base Reactions (Unfactored)

Axial Load (Kips):	35.7	Shear Force (Kips):	31.2
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3470.1

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.0	Depth of Base BG (ft.):	8.5
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	3.00
Length of Pad (ft.):	23.5	Width of Pad (ft.):	23.5
Final Length of pad (ft)	23.5	Final width of pad (ft):	23.5
Control Value for Cell D18:	0	Control Value for Cell F18:	0



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	40	
Vertical Rebar Size #:	11	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	36	Tie Spacing (in):	8.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	11	
Concrete Cover (in.):	4	Unit Weight of Concrete:	150.0	pcf
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	28	Qty. of Rebar in Pad (W):	28	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	28	Qty. of Rebar in Pad (W):	28	

Soil Design Parameters:

Soil Unit Weight (pcf):	125.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Allowable Net Soil Bearing (psf):	5000	Allowable Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hori. force for O.T.M.:	No	Reduction factor on the maximum soil bearing pressure:			1.00	

Foundation Analysis and Design:

Total Dry Soil Volume (cu. Ft.):	2825.71	Total Dry Soil Weight (Kips):	353.21
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	353.21	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1887.66	Total Dry Concrete Weight (Kips):	283.15
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	283.15	Total Vertical Load on Base (Kips):	672.10

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	2911	<	Allowable Soil Bearing (psf):	5000	0.58	OK!
Allowable Foundation Overturning Resistance (SF=1.5, kips-ft.):	5264.8	>	Applied Momont (kips-ft):	3751	0.71	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.11	OK!				

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90		Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65		Wind Load Factor on Concrete Design:	1.30		
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	1.56		Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	8832.5	>	Design Factored Moment (Mu, Kips-F	3657.3	0.41	OK!
Calculated Shear Capacity (Kips):	589.7	>	Design Factored Shear (Kips):	40.6	0.07	OK!
Calculated Tension Capacity (Tn, Kips):	3032.6	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	7273.9	>	Design Factored Axial Load (Pu Kips):	46.5	0.01	OK!
Moment & Axial Strength Combination:	0.41	OK!	Check Tie Spacing (Design/Required):		0.6667	OK!
Pier Reinforcement Ratio:	0.010	Reinforcement Ratio is satisfied per ACI				
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	725.5	>	One-Way Factored Shear (L-D. Kips):	265.7	0.37	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	725.5	>	One-Way Factored Shear (W-D., Kips)	265.7	0.37	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	809.9	>	One-Way Factored Shear (C-C, Kips):	446.1	0.55	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0049	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0049		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	5796.6	>	Moment at Bottom (L-Direct. K-Ft):	576.3	0.10	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	5796.6	>	Moment at Bottom (W-Direct. K-Ft):	576.3	0.10	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	8062.5	>	Moment at Bottom (C-C Dir. K-Ft):	815.1	0.10	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0049	OK!	Upper Steel Reinf. Ratio (W-Direct.):	0.0049		
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	5796.6	>	Moment at the top (L-Dir Kips-Ft):	688.5	0.12	OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	5796.6	>	Moment at the top (W-Dir Kips-Ft):	688.5	0.12	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	8062.5	>	Moment at the top (C-C Direc. K-Ft):	792.6	0.10	OK!